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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

From Consumption to Tuberculosis. By S. ROODHOUSE GLOYNE, M.D. 1253
The Complement-fixation Reaction in Influenza. By WILSON SMITH, M.D. 1256
Inhibitory Effect of Testosterone Propionate on Experimental Prostatic Enlargement. By S. ZUCKERMAN, M.R.C.S. 1259
Complement Titre in Acute Nephritis. By C. E. KELLETT, M.R.C.P.—(*With charts*) 1262
Intravenous Injections of Charcoal in the Treatment of Acute Febrile Disease. By E. DAVIS, M.D. 1266
Palpebritis from Eyelid "Shading." By H. C. SEMON, F.R.C.P. 1267
Amaurosis in Pernicious Anæmia. By C. R. BOX, F.R.C.P. 1269

MEDICAL SOCIETIES

Royal Society of Medicine: Section of Obstetrics and Gynecology: Hormones 1269
Section of Physical Medicine: Short-wave Therapy 1271
Royal Academy of Medicine in Ireland: Puerperal Sepsis 1273

NEW INVENTIONS

A Ring Knife for Adenoidectomy. By NORMAN PATTERSON, F.R.C.S.—(*Illustrated*) 1274

REVIEWS AND NOTICES OF BOOKS

Syphilis and its Treatment. By W. A. Hinton, M.D. 1275
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L'année thérapeutique. By A. Ravina 1276
Hospital Accounts and Financial Administration. By Captain J. E. Stone, F.S.A.A. 1276
Medical Procedures, Operative and Diagnostic. By M. Ibrahim, M.R.C.P., and P. Ghalioungui, M.R.C.P. 1276

LEADING ARTICLES

A REGIONAL SCHEME FOR RADIUM TREATMENT .. 1277
WORK AS A REMEDY 1277
BONE TRANSPLANTATION 1278
WORKMEN'S COMPENSATION AND THE DOCTOR 1279

ANNOTATIONS

The Cinema in Psychiatry 1280
Helium in Therapeutics .. 1280
An Exhibition of British Architecture 1281
The Heart in Vitamin Deficiency 1281
A National Dental Service for Sweden 1281
Chemistry of Dermatitis . 1281
The Outlook in Advanced Cancer 1282
The Medical Stamp Duty Inquiry 1283
Limitation of Opium Production 1283
B C G Again 1283
Adventures in Medical Research 1284
A Second Volume 1284

PROGNOSIS

CXXI.—Breech Presentation. By CHASSAR MOIR, M.D.—(*Concluded*) 1285

SPECIAL ARTICLES

Medical Libraries. By Sir HUMPHRY ROLLESTON, F.R.C.P. 1286
Public Health Congress: Recreations and Amusements in Mental Hospitals—Place of Epileptics in the Community 1289
Royal College of Surgeons of England: Annual Meeting of Fellows and Members 1292
Oxygen Laid On.—(*Illustrated*) 1293
Advances in Cancer Research 1294
An Ambulance in Spain.—(*With map*) 1295
General Medical Council: President's Address ... 1299
Medicine and the Law: Damages for Professional Negligence against Doctor's Widow—Hospital Patients' Property 1299

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Ætiology of Acute Rheumatism (Dr. W. H. Bradley) 1303
The Medical Register (Mr. M. Heseltine) 1303

OBITUARY

Major-Gen. Sir Walter Ogilvie, M.B.—(*With portrait*) 1304
William Leonard Braddon, F.R.C.S. 1304
Henry Gordon Greaves, M.B. 1304
Frederick William Oldershaw, M.R.C.S. 1305
Thomas Percival Berry, M.D. 1305

PANEL AND CONTRACT PRACTICE

The Year's Work 1296

THE SERVICES

Royal Naval Medical Service—Royal Army Medical Corps—Royal Air Force—Indian Medical Service—Deaths in the Services . 1300

GRAINS AND SCRUPLES

From a Doctor in Retirement (IV.) 1297

PUBLIC HEALTH

Middlesex Sewage Scheme 1305
Infectious Disease in England and Wales.... 1306

PARLIAMENT

Divorce Law Reform 1306
Notes on Current Topics: Infanticide Bill 1306
Question Time: Enlistment for the Royal Air Force—Unemployment Regulations and the Means Test—Canned Goods and Public Health—Milk Pasteurising Plants—Blacklisted Elementary Schools—Illegal Operations and Maternal Mortality 130

MEDICAL NEWS

University of Oxford 1308
University of London ... 1308
Society of Apothecaries of London 1308
University of Aberdeen .. 1308
Royal Sanitary Institute . 1308
Pharmaceutical Society of Great Britain 1308
Glasgow University Club, London 1308
Society of Medical Officers of Health 1308
British Serbian Units Branch 1309
British Institute of Radiology 1309
Elizabeth Garrett Anderson Hospital..... 1274

NOTES, COMMENTS, AND ABSTRACTS

A Group of Criminals ... 1311
Midwife and Baby 1311
New Method of Securing Bandages 1311
St. Marylebone and Western General Dispensary..... 1311

Appointments 1309
Medical Diary 1310
Vacancies 1312
Births, Marriages, Deaths 1312

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PATHOLOGIST, CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK

FROM consumption to tuberculosis. In setting forth on this quest of knowledge, I am not unmindful of Robert Boyle's remarks in his "Sceptical Chymist" about the chemist of his day. "Methinks the chymists in their searches after truth, are not unlike the navigators of Solomon's Tarshish fleet, who brought home from their long and tedious voyages, not only gold, and silver, and ivory, but apes and peacocks too." But at the risk of bringing apes and peacocks, and other vain creatures, rather than good solid worth of historical treasure, I wish to try and set forth some of the great truths on which our specialty of tuberculosis has been founded.

Looking back over the story one is impressed with the ups and downs of the study. We have had our Dark Ages and Renaissances, even our Reformations and Revolutions like the rest, and they have often come about through influences quite outside the control of those who studied the disease. Take, for instance, morbid anatomy—not a revolution but an evolution. It would be difficult to exaggerate the influence of post-mortem examinations on our study, but the history of the coroner's court suggests that the practice of making these examinations was developed out of the purely legal duty of collecting feudal dues at death. Another example—this time a relic of our story's dark ages—is to be found in that baneful relic of seventeenth century legislation, the window tax. Passed in 1695 in order to defray the expenses of silver recoinage, it was not repealed until 1851 when it was producing a revenue of nearly two million pounds a year. Its effect upon cottage sanitation must have been woeful, and even to-day the old cottage with the bricked-up window is not an unfamiliar sight.

Clinicians and Anatomists

We have the Greeks to thank for the early work on the disease. Not only did they depict the chronic wasting forms of chest disease, but they described empyema and even practised oleothorax. And when, later, they took with them to Rome their knowledge of clinical medicine they rescued the study of tuberculosis from destruction. Indeed, we owe to them the word tubercle as well as much else. Of course they confused other diseases with tuberculosis, but so do we. The wonder is not that they confused so much, but that they got so much right and that it was possible to learn so much morbid anatomy by way of clinical medicine.

For the rest, morbid anatomy had to wait all through the Middle Ages and the Renaissance for the advent of Sylvius, still teaching the while the tenets of Galen. During these centuries of religious strife, Arab, Jew, and Christian at least agreed upon one thing, they all looked with extreme disfavour upon any interference with the dead, and popular prejudice was on their side. But knowledge came at the long last. Writing a few years after Harvey's discovery of the circulation, Sylvius described the enlargement of the lymphatic glands in tuberculosis as seen in the cadaver. He concluded that these same glands "must be present in the body in a healthy state also but so small that they escape detection . . . like the capillary blood-vessels in the conjunctiva." And so with one brilliant observation and deduction the real foundation of the morbid anatomy of tuberculosis was laid. It is a pity Sylvius did not follow it up, but he was busy thinking out a new system of humoral pathology and the observations on the lymph glands were carried no further. Except for a few isolated workers such as Morgagni and Morton, Stark, and Percival Pott morbid anatomy did not really advance the study of tuberculosis greatly until after John Hunter. Meanwhile however two contributions of fundamental importance had come from the clinical side—the introduction of percussion and auscultation.

Sylvius had blazed the trail but few had followed. For the most part morbid anatomy had to wait upon the elder brother, normal structure, and there was little progress along these lines until after Harvey had described the circulation and Malpighi the finer anatomical structure of the lung. Nearly a century passed and then in 1745 those uneasy colleagues, the barbers and the surgeons, separated and with this dissolution went by the board an old by-law which forbade members to practise dissection. Private anatomy schools now grew up apace and with them the gruesome products of the hangman's art, thefts of dead bodies, bribes, blackmail, and hush-money. They were rough and ready times, the age of Smollett and "Roderic Random," and a remarkable literature was produced. Out of this age there arose also an equally remarkable body of morbid anatomists of whom John Hunter was facile princeps. It is difficult to estimate the full value of a man who touched life at so many points as Hunter did, and his contribution to tuberculosis is to be sought in the foundation of morbid anatomy which he laid.

By the middle of the nineteenth century the whole body had been thoroughly explored for tuberculosis as far as it was possible to do so with the naked eye. Once the prejudice against post-mortem examinations had been removed morbid anatomists took full advantage of their opportunities. We are told that in Vienna Rokitansky had the disposal of between 1500 and 1800 bodies a year and that in the course of his life he made 30,000 autopsies. Many of these men were clinicians too and they took infinite pains to correlate clinical signs and post-mortem findings. It is said that Sutton used to mark out the limits of dullness with a caustic pencil, and it is related that on one occasion after he had left the ward a patient called out to his opposite number "Did he mark yer, Bill, 'cos them as he marks dies." Of course they did. Sutton was defining what he expected subsequently to find.

At this time a new force came into play with the discovery of the achromatic lens in the use of the microscope. When Sir James Paget discovered the *Trichina spiralis* in the dissecting-rooms of St. Bartholomew's Hospital in 1835 there was no microscope in the hospital, nor in the Natural History Section of the British Museum, and he had to go to a botanist to borrow one. Within ten years von Gluge and Lebert had applied microscopical technique to the study of the tubercle and histological discoveries came thick and fast. Langhans described the giant cell and Hermann, Ehrlich, Weigert, and others

* Abridged from a presidential address to the Tuberculosis Association on Nov. 20th.

introduced stains. Overshadowing the whole subject was the great intellect of Virchow. Quite apart from his contributions to the study of tuberculosis—and they were numerous, including the recognition of the tuberculous nature of lupus—Virchow created cellular pathology as a separate study. He dominated his day and generation, as Metchnikoff did the next, with the magnitude of his conceptions. As an advanced liberal in education, politics, and pathology alike, the human body was to him a cell state in which every cell was a citizen and disease a conflict of citizens.

The Parasite

Meanwhile side by side with the new study of cellular pathology a fresh conception of tuberculosis was growing up, that of infectivity. The idea, however, was not entirely new. As far back as the eighteenth century Spain had made regulations, similar to those in vogue for plague, for the burning of clothing, &c., of persons who had died of tuberculosis. Pasteur's new work on fermentation and the diseases of the silkworm, too, doubtless turned men's minds in the same direction. Villemin's fertile brain did the rest. In 1867 he published the results of experiments which showed that tuberculous pus injected into animals caused tuberculosis. Cohnheim, Baumgarten, and others followed and Koch supplied the final proof with the discovery of the bacillus.

At this point the two great conceptions of modern pathology, the cell and the parasite, reached common ground. Virchow's cellular citizens were not necessarily in conflict with each other, they were, as Metchnikoff showed, in conflict with a common enemy from without, to wit, the parasite. "Henceforth," said Koch, "the fight with this terrible plague of mankind will be no longer against a vague something but against a tangible parasite whose conditions of life for the most part are known and can be still investigated."

With one stroke Koch had put into their correct perspective all the loose ill-defined terms of the past—King's evil, scrofula, consumption, phthisis. No wonder Virchow sat on in silence when Koch had finished speaking at that memorable meeting of the Berlin Physiological Society. To Virchow consumption and tuberculosis were two "separate, though commonly associated, morbid processes" (Krause), and the old warrior of many medical battles, it is said, never to the end of his life reconciled himself fully to the new order. From consumption to tuberculosis: the road had been a long and difficult one. Physicians, surgeons, morbid anatomists of all ages had trodden it. They had fallen by the way, many of them victims of the disease they studied and now at last the goal was reached. But only to start afresh. Science knows no rest and in the light of the new knowledge the quest began all over again.

The first of the new problems was produced by Koch himself. Ten years after the discovery of the bacillus he announced to the world that the bacillus excreted a toxin which he called tuberculin. This is not the place to embark on the stormy sea of the tuberculin controversy, the "Heilmittel" which failed to cure. The most important point of the discovery, to my mind, was not the tuberculin at all, but the effect which the conception of a tuberculous toxin has had upon all our subsequent ideas. This view of an exo- and an endo-toxin has shaped our theories, stimulated our research, and altered profoundly our treatment. Thanks to those who followed Koch along this line, rest as a therapeutic measure has come to be perhaps the most important of the great tuberculosis triad. This advance has been largely if not entirely due to the discovery of the toxins of the bacillus. It is not my purpose to enter upon the history of the treatment of tuberculosis, but I often wonder what the toll of the disease must have been in the early days of the fresh-air school before rest was recognised as so vitally important. As Francis Thompson remarked in his essay on Brother Ass the Body, to over-drive a donkey was barbarous; to over-drive one's own lawful body was a meritorious act.

The Patient

All thoughts were now, however, turned to the tubercle bacillus itself. In studying the seed and its progeny we seem to have neglected those considerations of soil which had been so important before the discovery of the bacillus. If once we could control the seed, the soil would look after itself. And so we framed preventive laws for the eradication of the bacillus and threatened pains and penalties for expectorating in public places, which we have never carried out. But we are still woefully ignorant about the soil: indeed we are not much wiser about it than our fathers were. And yet it is a matter of very considerable importance, especially as regards the native races under the care of the British Empire. If we are not very careful tuberculosis will decimate some of the races of Central Africa which are virgin soil in the same way that it has done the Maoris and North American Indians.

As for heredity, we are now fairly confident that the tubercle bacillus is not part of our inheritance. Occult familial infection in early life fits the facts in these cases better and is supported by clinical and experimental evidence. Hereditary predisposition has not stood us in much better stead. It seems to be limited to rare instances in which congenital defects, such as stenosis of the pulmonary artery, profoundly alter the hæmo-respiratory exchange. But if hereditary predisposition is of so limited an application what shall we say of an environmental predisposition? Here the evidence is more convincing. There are cases, for instance, in which the portals of entry stand permanently opened too wide, as in the case of the mouth-breathing child, though I sometimes wonder if the argument has not been a little overworked. There are psychological conditions too which favour mass infection, notably amongst the feeble-minded and insane, who tend to be careless and dirty in their habits and fall a ready prey to most infections, so much so indeed that some physicians have sought to postulate a special immunological defect in the soil. Whether chronic respiratory disease in general provides a favourable soil for the tubercle bacillus has been discussed for many years. The statistical proof in the affirmative in the case of silicosis and asbestosis is now quite definite, but what shall we say of the catarrhal child who returns to the out-patient department of our hospitals and to our dispensaries winter by winter? Is he more prone to tuberculosis than his healthy brother or not? Opinion seems to be divided and I know of no research work directed to the elucidation of the problem. Certainly in culture media in the laboratory the tubercle bacillus does not thrive well in the presence of other organisms, especially those of the pyogenic group.

And lastly there are the disorders of metabolism. No one has yet satisfactorily shown, for example, whether chronic alcoholism is or is not a predisposing

cause of tuberculosis; so few people seem able to approach this delicate subject in a proper spirit of impartial inquiry. Syphilis again is in the same position, as are the vitamin-deficiency diseases. The confusion between syphilis and tuberculosis especially was a sore trial to the early morbid anatomists. Some of the older writers believed that syphilis tended to protect against tuberculosis, others that it predisposed, and although of late years precise laboratory methods have produced a wealth of new information on the subject they have not solved the problem. In the case of diabetes and tuberculosis we are on firmer ground. The diabetic has always been considered a favourable soil for the tubercle bacillus and until the introduction of insulin these two diseases presented a combination which was utterly defeating. Nowadays with the delicate adjustments of the blood-sugar which have become possible the tuberculous diabetic is in a far happier position and so is the physician. But with a few brilliant exceptions such as this, we do not know a great deal more about the soil than Koch knew, and I would suggest that the time has come when we might well reconsider the question in the light of all the new knowledge that has come to us by way of the physiological laboratories.

The Uses of X Rays

Let us now turn for a moment to another recent development in our story—radiology. The physicist may well be proud of his contribution to the study of tuberculosis. He gave us the modern microscope with its achromatic lens without which we could hardly have advanced much beyond Laennec, for the nineteenth century morbid anatomists saw almost as far as was possible with the naked eye. The physicist has now given us another pair of eyes, as it were, in X rays. Röntgen discovered them as long ago as 1893, but their real contribution to the study of tuberculosis did not begin until after the war. For myself I shall always feel immensely proud to have known and worked at Victoria Park with Hugh Walsham who did so much to pioneer the chest radiogram in London and who died a martyr to the cause, a colleague so serene and happy in temperament that I doubt if he ever thought of himself as a martyr at all.

The influence of X rays upon the diagnosis of chest diseases has indeed been far-reaching, but their effect upon pathology seems likely to become almost as important. A new science which might almost be called Röntgen pathology has grown up in the last twenty years. It began with hilum tuberculosis. The enlarged shadows at the roots of the lungs were for a short time thought to be the primary pulmonary lesion in tuberculosis, despite the fact that such a view caused very considerable difficulties in the matter of lymphatic drainage, and I well remember the satisfaction I experienced when Clive Riviere called my attention to the work of Parrott and Küss and the Ghon School which showed that there was an earlier lesion in the lung parenchyma and so reconciled anatomy and pathology. Hilum tuberculosis, if not primary, was of relatively small importance, and it has gone with the years like the early skiagrams on glass on which its images were recorded.

The frühinfiltrat came next. Clinicians and pathologists had for many years been aware of the fact that in certain cases the early lesion was not at the apex but some inch and a half below, but it remained for the German school of radiologists to demonstrate this lesion in all its bearings. From that time progress has been rapid.

Radiology has also vastly enlarged our knowledge of cavities and adhesions; it has furnished us with the necessary controls in collapse therapy and brought to light hitherto unsuspected pathological conditions such as epituberculosis. Further, it has gone far to create a new pathology in the study of other shadows. I use this last phrase advisedly because it raises an important point in the study of the disease. Radiology, as its technique improves, is presenting to our eyes new images, but they *are* images; we cannot touch them and they emit no sounds. They are recognisable by sight alone, as light and dark areas, as shadows with sharp or ill-defined and woolly margins. It seems to me we are in urgent need of a new terminology to describe what we see with that precision which is essential to all branches of science. I am reminded of a passage in Sir Philip Sidney's "Apologie for Poetrie." "We cannot play at chesse, but that wee must give names to our Chesse-men; and yet mee thinks, hee were a very partiall Champion of truth, that would say we lyed, for giving of peece of wood, the reverend title of a Bishop." All the same there is a tendency to borrow a phraseology from pathology and in so doing sometimes to introduce an unwarrantable deduction from a mere shadow. Thus in the case of hilum shadows an accurate phraseology was certainly needed for what we saw, but when we added the word tuberculosis, we made an inference from the observed facts which we now know to have been often wrong. A similar tendency is creeping in with regard to miliary shadows. We are apt to describe them as miliary tuberculosis. But there is a group of cases in which these shadows disappear after some months and are unaccompanied by the usual symptoms and signs of serious illness. Now miliary tuberculosis is a pathological term with a well-defined meaning denoting a fatal disease and I cannot help feeling that our minds will be all the clearer if we can give to the new science of radiology a terminology of its own which cannot be confused with pathology.

Clinical Pathology of Tuberculosis

The last event in the story which I have only time to deal with very briefly is clinical pathology. As far as tuberculosis is concerned it may be said to have started about 1846 with the practice of heating sputum with caustic solutions and examining the product under the microscope for elastic fibres. Before Koch's day the "curly fibre," as the old physicians called it, was of considerable diagnostic importance. The first text-book devoted solely to the clinical pathology of tuberculosis in English is that of Troup of Edinburgh, who published a most interesting work in 1886 entitled "Sputum: the Microscopy and Diagnostic and Prognostic Significations." The reader of the present day will probably be not a little astonished to find how much Troup knew about sputum examination. Even then, only four years after the discovery of the tubercle bacillus, we find him complaining that like Aaron's rod it had swallowed up everything else in the clinical pathology of sputum. The book contains photomicrographs of Curschmann's spirals and other bodies, made with a simple paraffin lamp illuminant, which would put many modern text-books utterly to shame.

In his original work Koch used alkaline methylene-blue with a counterstain of Bismarck brown for demonstrating the tubercle bacillus in pus. The famous Ziehl-Neelsen stain came later. Ehrlich laid the foundation of it by the discovery of the acid-fast property of the bacillus. Ziehl and Neelsen only contributed small modifications, and Prof.

William Bulloch tells us that neither the one nor the other published the method which bears their name: it is only to be found in a footnote in a paper by Johne in 1885. Such is fame. But the stain has become acid-fast in more senses than one. It has stood the corroding test of time for more than fifty years, a long long time for any technique in clinical pathology.

It is difficult for us to realise what a revolution Koch's bacillus created in clinical medicine. Within four years of its discovery Vincent Harris had overhauled some of the old specimens in the museum of St. Bartholomew's Hospital and found tubercle bacilli in several of them believed to be probably 70 years old, whilst the bacillus was being sought for in every kind of secretion. The Gaffky scale came about the same time, "a rather intricate musterbook," as Troup called it, for recording the number of bacilli per field. Since that day the clinical pathologist has been striving to find the bacillus ever earlier and earlier in the course of the disease. The latest developments in this direction have been concerned with the cultivation of the bacillus on various complicated media. This method has now reached such a high degree of proficiency that the biological test is under a cloud. Uncontrolled by subsequent guinea-pig test there is in it an obvious danger. A number of strains of acid-fast organisms other than typical tubercle bacilli have already been found, especially in renal disease and in long-standing chronic pulmonary disease. A new class of acid-fast bacteria indeed is in process of discovery and one awaits the results with some interest. In this connexion the rarity of the avian bacillus in human lesions should be noted. A small group of cases has been recorded on the Continent and in America, but as far as I am aware no case has yet been discovered in this country. The bovine bacillus has now achieved the notoriety of a vast literature of its own. It is responsible for some 5 per cent. only of the tuberculosis mortality of this country, but unfortunately some 20–30 per cent. of the tuberculosis deaths in children are due to its ravages. There appears to be no good reason why it should not become as rare as the avian bacillus if as a nation we would apply our will to the task.

Before leaving the subject of clinical pathology I cannot refrain from a brief mention of the tuberculin surveys, now the order of the day. The number of the records, especially amongst school-children, runs into tens of thousands yearly, though we in this country have been less enthusiastic than most. One wonders if it is not time that a good deal of this rather wearisome work ceased, and that instead of vast numbers of tests performed once and once only, the enthusiasts should repeat their tests at more regular intervals with X ray and clinical controls, as Heimbeck has done in the Oslo hospital nurses. The paper X ray film has made such a course economically possible.

The Outlook

And now my story must end. Consumption, the wasting disease of uncertain pathology but dreaded prognosis, has become tuberculosis, and this in turn has become a curable disease.

In Paris just after the time of Napoleon, Laennec tells us, about one-third of the patients attending the hospitals suffered from phthisis and the death-rate must have been appalling. Now the mortality is steadily falling and, what is perhaps more significant, certain forms of the disease are disappearing. Twenty years ago Cobbett commented on the decline of tabes mesenterica, out of all proportion to the fall of tuberculosis mortality of other forms of the disease. An older generation described a condition known as tuberculosis of the sole of the foot in young children. It is said to have disappeared with the improvement in social conditions and the disappearance of the barefoot urchin of the slums. Certain forms of bone and joint tuberculosis seem also to be less prevalent, notably tuberculous dactylitis, and I feel sure there are fewer lupus cases to be seen about the streets than there were. In the south of England too there is a general impression I find amongst physicians that tuberculous broncho-pneumonia of childhood is a less prevalent disease than it was. Perhaps we must not rely too much on general impressions; for fashions in diagnosis are apt to change with the years quite as readily as diseases; but, when every allowance is made for this, I think we can look to the future with some satisfaction. Tuberculosis will not disappear from our midst in our lifetime, but slowly and surely the mortality curve is falling and the age at death receding to the later years.

THE COMPLEMENT-FIXATION REACTION IN INFLUENZA

By Wilson Smith, M.D. Manch., Dipl. Bact. Manch.

MEMBER OF THE SCIENTIFIC STAFF OF THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH, HAMPSTEAD, LONDON

Shortly after the isolation of influenza virus from human cases (Smith, Andrewes, and Laidlaw, 1933), it was realised that an in-vitro reaction for the estimation of serum antibodies would be invaluable, and many attempts were made in this direction. The later discovery that mice could be infected with virus (Andrewes, Laidlaw, and Smith, 1934) provided a mouse-protection test for serum assay which diverted attention from the in-vitro reactions for some time. The mouse-protection test, however, requires very large numbers of animals and has, moreover, a large margin of error due to varying susceptibility of mice, so that renewed attempts were made to utilise the complement-fixation reaction. Some measure of success was attained as soon as it was found that a long period of fixation prior to the addition of the sensitised blood corpuscles is essential.

The early unsuccessful experiments were made with antigens prepared from various tissues of infected ferrets and sera from recovered ferrets. It is extremely probable that successful reactions could now be demonstrated with these reagents, but as many ferret antigens are very anticomplementary and the influenzal horse sera which have been adopted as standards in all mouse-protection tests contain immune bodies to ferret tissue proteins, it was decided to concentrate attention upon mouse virus and tissue-culture virus as sources of antigen. Culture antigen is most generally useful, but mouse lung antigen has advantages for certain types of experiment.

An experiment was made in which culture antigen and mouse lung antigen were each tested with influenza immune horse and normal horse sera against various doses of complement. Duplicate sets of mixtures were prepared; one set was kept in the water bath at 38° C. for two hours before the addition of sensitised cells, the other was kept in the ice chest overnight following two hours' fixation at 38° C. The results given in Table I. show clearly the necessity

for a prolonged fixation time in the case of both antigens.

An experiment in which various doses of two immune sera were tested against various doses of complement showed that serum titrations could be effected by using a constant amount of either reagent with graded doses of the other. The method of testing several doses of serum against a constant amount of complement appeared, however, to be much more sensitive, and on general principles might be expected to give a truer measure of the antibody content of a serum. Finally, the following technique was evolved and used, with but minor variations, in all the experiments recorded with both human and experimental animal sera.

TABLE I.—SHOWING THE NECESSITY FOR PROLONGED FIXATION

Fixation.	Antigen, 0·2 c.cm. dose.	Serum, 0·2 c.cm. dose.	M.H.D.'s of complement. 2	4	6	8	10
Two hours water bath, 38° C.	Culture.	Immune horse.	+ + + +	0	0	0	0
		Normal "	+ +	0	0	0	0
	Mouse lung.	Immune "	+ + + +	0	0	0	0
		Normal "	+ +	0	0	0	0
Two hours water bath, 38° C. + Overnight in ice box.	Culture.	Immune "	+ + + +	+ + + +	+ + + +	+ + + +	+ + +
		Normal "	+ +	0	0	0	0
	Mouse lung.	Immune "	+ + + +	+ + + +	+ + + +	+ +	+
		Normal "	+ +	0	0	0	0

+ + + + = complete fixation. 0 = complete hæmolysis. Controls of each antigen alone and each serum alone with 2 M.H.D. complement gave complete hæmolysis with both short and long fixation.

TECHNIQUE

Culture antigen.—Cultures of influenza virus in a medium of minced chick embryo and Tyrode's solution are made by the method described by Smith (1936). Several Carrel flask cultures are pooled. The tissue fragments are ground with powdered glass in a mortar and emulsified in the fluid portion of the culture previously removed by pipette. The emulsion is centrifuged for 10 minutes at 3000–4000 r.p.m. The supernatant fluid, after the addition of merthiolate to a concentration of 1 in 20,000 in order to prevent bacterial growth, forms the antigen. It is used in a dose of 0·1 c.cm. or 0·2 c.cm., depending upon the degree of anticomplementary activity. Stored in the ice box it retains its antigenic potency for many weeks but must be recentrifuged when a deposit forms at the bottom of the container.

Mouse lung antigen.—A 5 per cent. emulsion of infected mouse lung is centrifuged, clarified, and filtered through a gradocol membrane, as described in an earlier paper (Smith, Andrewes, and Laidlaw, 1935). The filtrate is used in a dose of 0·1 c.cm. or 0·2 c.cm. when not more than two or three days old, and without the addition of merthiolate.

Sera.—An immune horse-serum is included in every test as a standard. Serum IH 2 is the serum of a horse immunised exclusively with human strain virus, IH 4 that of a horse immunised with the virus of swine influenza (Shope). In both cases, the virus suspensions used for immunisation were made from tissues of infected ferrets so that the sera contain antibodies against ferret proteins.

All sera are first clarified as much as possible by centrifugation and then inactivated by heating to 56° C. for half an hour. Merthiolate (1/20,000) may be added if it is desired to store the sera for future use.

Complement.—Fresh guinea-pig serum is titrated each day and a dilution made such that 0·1 c.cm. contains 1 M.H.D. (minimum hæmolytic dose). Usually 4 M.H.D., occasionally 3 M.H.D., are used in the test.

Sensitised cells.—The test dose consists of 1 c.cm. of a sensitised 2·5 per cent. suspension of sheep erythrocytes—each c.cm. contains 5 M.H.D. of hæmolytic amboceptor.

SETTING UP OF THE TEST

Falling doses of each serum from 0·2 c.cm. to 0·0125 c.cm. are mixed with 4 M.H.D. complement, either 0·1 c.cm. or 0·2 c.cm. antigen, and sufficient saline to make a total volume of 1 c.cm. The reagents are added in the order saline, complement, serum, antigen, and are mixed by inversion of each tube. The set is incubated in a water bath at 37° C. to 40° C. for two hours and then kept overnight (usually 18 hours) in the ice chest. The sensitised R.B.Cs. are added, mixed by inversion, and the tubes placed in the water bath for half an hour. The result is read at the end of this period, and again after a sufficient time in the ice chest, to allow sedimentation of non-hæmolysed blood corpuscles.

The controls, always included, consist of 0·2 c.cm. of each serum, and the dose of antigen used, each with both 1 and 2 M.H.D. of complement; also 1 M.H.D. of complement with saline. Many sera and all antigens are found to inhibit complete lysis of the R.B.Cs. with 1 M.H.D., but usually fail to do so with 2 M.H.D. of complement.

The Correlation Between Complement-fixation and Mouse-protection Tests with Human Sera

Many human sera have been assayed in terms of the standard horse-serum IH 2, by both mouse-protection and complement-fixation tests. The mouse-protection tests were done by the method fully described by Andrewes, Laidlaw, and Smith (1935), in which dilutions of the sera to be tested and the standard serum are mixed with a fixed quantity of virus filtrate prepared from infected mouse lungs and the mixtures inoculated into groups of mice by intranasal instillation under ether anæsthesia. The estimation of serum potency is based upon the effects of the different dilutions in preventing and limiting influenzal lung lesions in the groups of mice.

The results of five experiments are summarised in Table II. In all these experiments culture antigen from human strain virus was used. Many of the C.F. tests (complement fixation) were done before the results of the corresponding mouse-protection tests were known. With most sera there was a close agreement between the antibody values obtained by the two methods, but there are notable exceptions. It is evident that C.F. fails to detect small amounts of antibody which are just demonstrable by the protection test; all the sera graded as less than S/125 failed to show any fixation. Three sera, P, S, and B in experiments 2 and 3, gave no fixation in spite of having moderate amounts of neutralising antibody. Two of these, P and B, call for special comment. The donors were men who possessed no demonstrable neutralising antibodies before receiving an inoculation of formolised influenza virus vaccine. The artificial immunisation led to the appearance of these antibodies (Andrewes and Smith, 1936), but the sera still failed to fix complement. The possible significance of this phenomenon is discussed below.

TABLE II.—CORRELATION BETWEEN COMPLEMENT-FIXATION AND MOUSE-PROTECTION TESTS WITH HUMAN SERA

Expt.	Serum.	Complement fixation. Serum dose c.cm.						Potency measured by mouse-protection test.
		0·2	0·15	0·1	0·05	0·025	0·0125	
1	IH 2	++++	++++	++++	++++	+++	..	S
	A	++++	++++	++++	+++	++	..	S/5
	C	++++	+++	++	tr.	0	..	S/5–S/25
	D	+++	+++	++	+	0	..	S/5–S/25
	E	0	0	0	0	0	..	<S/125
	F	0	0	0	0	0	..	<S/125
	G	0	0	0	0	0	..	<S/125
	WS Before immunisation.	+++	++	tr.	0	..	..	S/25–S/125
	" First sample	++++	+++	+++	+	..	..	S/5–S/25
	" Second after	++++	+++	+++	+	..	..	S/5–S/25
	" Third immunisation.	+++	+++	++	tr.	..	..	S/5–S/25
2	IH 2	++++	..	++++	++++	++	0	S
	P After immunisation.	0	..	0	0	0	0	S/5–S/25
	S	tr.	..	0	0	0	0	S/25
3	IH 2	++++	..	++++	+++	+	0	S
	B Before immunisation.	0	..	0	..	..	..	<S/125
	" First sample after	tr.	..	0	0	0	0	S/5
	" Second immunisation.	0	..	0	0	0	0	S/5
4	IH 2	++++	++++	++++	+++	..	..	S
	B Before immunisation.	0	0	0	0	..	..	<S/125
	WS Before immunisation.	++	++	+	tr.	..	..	S/25–S/125
	S-H Before infection.	0	..	..	..	..	..	<S/125
	S-H First sample after infection.	++++	++++	+++	++	..	..	S–S/5
5	IH 2	++++	++++	++++	++	..	..	S
	S-H Fourth sample after infection.	++++	+++	tr.	0	..	..	S/5–S/25

S = potency equal to standard horse-serum IH 2. S/5 = potency one-fifth standard, &c.

In contrast to these, the samples of WS serum (expts. 1 and 4) showed an increase of both protective and complement-fixing antibodies following artificial immunisation, but in this case there was a considerable degree of basic immunity before vaccine was administered. The S-H serum samples (expts. 4 and 5) were obtained from a man before and after a typical attack of influenza, believed to have been contracted from infected ferrets (Smith and Stuart-Harris, 1936). The illness evidently led to a striking increase of circulating antibody demonstrable by either test. Apart from the samples from artificially immunised men, only one serum (S, expt. 2) showed an entire lack of correlation between the results obtained by the two methods of test.

Use of C.F. Reaction in Following the Course of Immunisation of Experimental Animals

When preparing an immune serum in an experimental animal it is both costly and time-consuming to use the mouse-protection test for the titration of serum samples; moreover, the best moment to harvest the serum may be missed owing to the inevitable delay of several days before the results of a titration are available. The experiment summarised in Table III. shows how useful the more rapid and economical complement-fixation test may be. A goat received the following treatment.

July 17th, 1936: Normal serum obtained.
August 11th: Inoculated subcutaneously with 12 c.cm. 5 per cent. mouse lung suspension.
August 14th: Inoculated subcutaneously with 19 c.cm. 10 per cent. mouse lung suspension.
August 20th: First immune serum sample obtained.
Sept. 29th: Inoculated subcutaneously with 28 c.cm. 10 per cent. mouse lung suspension.
Oct. 2nd: Second immune serum sample obtained. Inoculated subcutaneously with 20 c.cm. 10 per cent. mouse lung suspension.
Oct. 5th: Third immune serum sample obtained.
Oct. 8th: Serum harvested.

It will be seen that the complement-fixation tests were an adequate measure of the response to immunisation. The early inoculations apparently laid down a basic immunity so that further treatment after a rest of six weeks led to a rapid rise of virus neutralising antibodies in the circulation. The in-vitro test enabled serum to be harvested some days before the result of the last mouse-protection test was available.

Reciprocal Tests with Human and Swine Strain Reagents

It is known that many adult human sera contain antibodies to the swine strain of influenza virus, but none to the human strain, and this has led to the suggestion that swine strain virus may have been responsible for epidemics of influenza in the past

TABLE III.—THE RISE OF ANTIBODIES IN SERUM OF IMMUNISED GOAT

Serum.	Mouse-protection test. Final dilution of serum.				Complement-fixation test. Dose of serum c.cm.				
	½	1/10	1/50	1/250	0·2	0·1	0·05	0·025	0·0125
IH 2	..	0	0	1	++++	++++	++++	+++	tr.
Goat. Normal serum	3	3	..	..	0	0	0	0	0
" First immune sample ..	0	3	3	2	tr.	tr.	tr.	0	0
" Second " " ..	..	0	3	3	+++	++	0	0	0
" Third " " ..	..	0	0	0	++++	++++	+++	++	+

Figures under mouse-protection test indicate the number of mice in each group of three showing lung lesions.

(Laidlaw, 1935). There is no doubt that the two strains possess certain antigenic factors in common, but they can be readily differentiated by mouse-protection tests with the appropriate immune horse sera. It was found, however, that serum IH 2 gave better complement fixation than serum IH 4 with both human and swine strain culture antigens. The result was so unexpected that it was thought that cultivation in chicken embryo medium must have caused a change in the antigenic constitution of the viruses of such nature that strain specificity was lost. The hypothesis was tested by the experiment recorded in Table IV. It is clear that each strain is best neutralised by its homologous horse-serum in mouse-protection tests, but gives better complement fixation with the human strain antiserum IH 2. A few experiments not included in the Table have indicated, however, that swine strain antiserum IH 4 gives more fixation with swine strain antigen than it does with human strain antigen, although inferior to serum IH 2 against either antigen.

TABLE IV.—RECIPROCAL TESTS WITH HUMAN AND SWINE STRAIN REAGENTS

Antigen.	Serum.	Mouse-protection test. Dilution of serum.			Complement-fixation test. Dose of serum c.cm.				
		1/10	1/50	1/250	0·2	0·1	0·05	0·025	0·0125
Human strain culture ..	IH 2	0	1	2	++++	++++	++++	++	0
	IH 4	3	3	3	+	tr.	0	0	0
Swine strain culture ..	IH 2	1	0	3	++++	++++	++++	++	0
	IH 4	0	0	1	+	tr.	0	0	0
Swine strain	IH 2	2	2	3	+++	+++	++	0	0
Mouse lung filtrate ..	IH 4	0	0	3	+++	+++	tr.	0	0

Discussion

The lack of correlation between complement-fixation and mouse-protection tests with some samples of human sera suggests that influenza viruses are antigenically complex and call forth in infected animals the production of at least two antibodies of which only one is concerned with the complement-fixation reaction. although both may possibly assist in virus neutralisation. The failure of the in-vitro test to differentiate between human and swine virus strains and their homologous antisera lends support to this view. As a tentative hypothesis which will demand much further work for its substantiation, it may be suggested that a group antigen, common to the two strains, is responsible for the partial degree of cross-immunity which follows infection in ferrets and mice, produces an antibody with some neutralising power against either strain and is able to fix complement in the presence of this antibody. Other antigens confer strain specificity and produce strain specific neutralising antibodies but do not enter into the complement-fixation reaction under the experimental conditions so far investigated.

The failure of sera from artificially immunised men to fix complement although possessed of demonstrable virus neutralising power may depend upon the slower production of the group antibody postulated. In the case of some other virus diseases, for example, vaccinia in rabbits, the antibodies demonstrable by in-vitro reactions appear later than those demonstrable by in-vivo neutralisation tests.

The fact remains that in the majority of human and animal sera examined, the estimation of complement fixing antibody gives a reasonably accurate measure of the protective power. Therefore, although the lack of correlation in a few cases limits the practical usefulness of the in-vitro test, it should prove of value in cases where the time factor is of importance and where suitable numbers of mice are not available for protection tests. It is hoped that it will also assist in the analysis of the antigenic structure of influenza virus strains of different origin.

Summary

1. A complement-fixation test is described for the titration of influenzal antibodies in the sera of men and experimental animals.

2. With the majority of sera the results given by complement-fixation and mouse-protection tests show close correlation. A few sera however fail to show such correlation.

3. Antibodies against human and swine strain viruses are not differentiated by the in-vitro test.

4. The possible significance of the results is discussed.

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INHIBITORY EFFECT OF TESTOSTERONE PROPIONATE ON EXPERIMENTAL PROSTATIC ENLARGEMENT

BY S. ZUCKERMAN, D.Sc. Lond., M.R.C.S. Eng.
BEIT MEMORIAL RESEARCH FELLOW
(*From the Department of Human Anatomy, Oxford*)

AT least three endocrinological theories of the causation of benign enlargement of the prostate have been suggested during the past four years.[1] Although mutually contradictory in essentials, these theories nevertheless in common suggest the administration of "male hormone" as the correct treatment for the disease. A potent synthetic male hormone, testosterone propionate, has recently been prepared,[2] but at present there is a lack of information about the amounts which should be used either in the treatment of enlarged prostate or in the treatment of other clinical conditions in which the hormone is indicated. Dosage needs to be controlled not only on the basis of clinical experience, but also in respect to indices of biological activity additional to that of the hormone's capacity to influence the growth of a capon's comb or of a male rodent's reproductive organs. Information of the first kind is as yet

unavailable. The present paper gives the results of certain experiments bearing on the second question.

These experiments relate more directly to the thesis that benign enlargement of the prostate may result from the action of œstrogenic substances than to any other of the suggested ætiologies of the disease. It is known that the daily injection into an immature male rhesus monkey of an adequate amount of œstrone (circa 100γ) will regularly result, within 14 days, in the general enlargement of its prostate, in a relative diminution of the number of prostatic glands, and in stratification of the epithelium of the uterus masculinus. Other changes which are induced within the same period include (*a*) stratification of the epithelium of all except the uppermost part of the urethra, (*b*) growth of the fibromuscular tissue and alterations in the epithelium of the seminal vesicles, and (*c*) swelling of the scrotal and surrounding skin. A previous experimental study [3] showed that these changes can be inhibited if an adequate amount of androstanediol is given simultaneously with the œstrone; it was also found that even after changes had been produced by the previous administration of œstrone, the normal condition of the prostate could be restored, in spite of the continued daily injection of œstrone, by the administration of androstanediol. The present experiments with testosterone and testosterone propionate were planned on the same basis as those just referred to, with this exception, that testosterone propionate is known to have a prolonged action,[2] and that an attempt was made to discover how widely injections of this compound can be spaced, while retaining its inhibitory influence.

MATERIAL AND METHODS

The experiments reported in this paper were performed on eleven immature male rhesus monkeys (*Macaca mulatta*), whose weights and ages are given in the accompanying Table. Estimates of age are based on the records of body-weight and dentition published by Schultz.[4]

Every animal was injected once daily, for periods varying between 10 and 21 days, with an oil solution containing 100γ of crystalline œstrone. All monkeys listed in the Table were also injected with a male hormone compound. Those marked "a" in columns 1 and 6 received a single injection of an oil solution of crystalline testosterone propionate on the first day of each course of injections, the amount given being noted in the Table. Those marked "b" received testosterone propionate on both the first and eighth days of the course of injections. The animal marked "c" (177) received 2·5 mg. of testosterone daily, and that marked "d" (179) 5 mg. of the same substance on alternate days. The last animal in the Table (131) marked "e," was given 100 mg. of androstanediol benzoate in oil on the first day of injections.

Preparations from normal rhesus monkeys of comparable ages, and from male monkeys that had been injected with similar amounts of œstrone alone, were available as controls. Tissues were removed on the day following the last injection. Histological preparations, cut at 10μ, were made of the prostate, seminal vesicles, and of several levels of the urethra. The sections were stained with Meyer's hæmalum and eosin.

EXPERIMENTAL RESULTS

External Changes.—In the study to which I have already referred,[3] on the suppression of the prostatic effects of œstrone, qualitative estimations of the degree of circumgenital cutaneous swelling occasioned by œstrone were indicated by the numerals 0–5, 5 representing the maximum external change observed in control animals receiving œstrone alone. In the accompanying Table the extent of swelling that occurred in the animals used in the present series of experiments is indicated according to the same scale.

Administration of Œstrone and Testosterone Propionate to Immature Male Rhesus Monkeys

No. (OM).	Weight (g.).	Approx. age in months.	Days injected.	Œstrone injected daily (mg.).	Total testosterone propionate (a, b) or testosterone (c, d) or androstanediol benzoate (e) injected (mg.).	Œstrone changes in prostate and urethra (deg. 0–5).	External scrotal &c., response (deg. 0–5).
(a) 160	3220	40	14	0·1	50 (a)	0–1	1
(a) 173	4400	50	14	0·2	50 (a)	0–1	4
(a) 159	3210	40	10	0·1	25 (a)	0–1	0–1
(a) 174	5060	51	21	0·1	50 (a)	3	5
(b) 162	2800	24	14	0·1	50 (b)	0	1
(b) 161	3060	32	14	0·1	25 (b)	0	2
(b) 175	4220	40	14	0·1	25 (b)	0	3–4
(b) 176	3330	34	14	0·1	10 (b)	0	3
(c) 177	2860	32	14	0·1	35 (c)	1	1
(d) 179	2550	28	14	0·1	35 (d)	0–1	1
(e) 131	4180	42	14	0·1	100 (e)	3	4

The œstrone was given daily. Animals marked (a) in columns 1 and 6 were given testosterone propionate in a single injection on the first day of each course of injections. Those marked (b) were given testosterone propionate on both the first and eighth days. The animal marked (c) (No. 177) received 2·5 mg. testosterone daily, and that marked (d) (No. 179) 5 mg. testosterone on alternate days. No. 131 (e) was given androstanediol benzoate on the first day of injections.

The first external response of an immature male rhesus monkey to the injection of œstrone alone is usually noticed about the fifth or sixth day, and comprises reddening of the skin of the base of the tail, immediately dorsal to the anus. The anus then begins to swell, and within two to three days reaches a maximum of swelling, which is usually resorbed by about the thirteenth or fourteenth day. The scrotum begins to swell about the eighth day of injections, and as a rule is still actively expanding by the fifteenth day. The skin adjacent to the anus and scrotum also thickens, swells slightly, and reddens. In grading the swelling that occurs, attention is paid to the degree of change shown both during and at the end of the period of injections. It will be seen from the Table that some external change occurred in all the animals that were injected with both œstrone and male hormone. In three animals the changes were very slight, and there can be no doubt that their suppression was due to the male hormone that was also administered.

The extent of the external response was approximately in inverse ratio to the relative amount of testosterone propionate administered, the latter being estimated in relation to the amount of œstrone given, and in relation to the period over which injections were continued. Individual variations also occurred, as for example between Nos. 175 and 161, both of which received the same injections.

Prostatic and Urethral Changes.—The extent to which the usual prostatic and urethral effects of œstrone were suppressed is indicated in column 7 of the Table by the numerals 0–5, 5 representing the maximum effect observed in control monkeys receiving corresponding amounts of œstrone alone.

The prostates and urethras of the four monkeys which were injected with œstrone daily and with testosterone propionate on two occasions (Nos. 162, 161, 175, 176) do not show any of the effects which normally follow the injection of œstrone. On the other hand the histological picture they present is characteristic of prostates that

have been acted on by male hormone. The utricular and urethral epithelia appear normal. The prostatic glands are much bigger and much more active than those of normal animals of comparable age. The dimensions of the prostates are also increased.

The prostates of Nos. 160, 173, and 159 also showed the effects of stimulation by male hormone. In addition all three showed a faintly perceptible thickening of the epithelium of the distal part of the cavernous urethra, a finding which suggests the beginning of an internal response to œstrone. No epithelial change had occurred either in the uterus masculinus, or in the membranous and prostatic parts of the urethra.

The prostate of No. 174 was peculiar, in so far as the epithelium of its uterus masculinus, like that of the urethra, had reacted in moderate degree to the œstrone that had been injected, whereas the prostatic glands and the general prostatic stroma showed no signs of having been affected. Indeed, compared with a prostate from a normal animal of comparable age, the glands appeared hyperactive.

The prostates of the two animals that had been injected with œstrone and testosterone showed almost no changes that could be associated with the male hormone; on the other hand, they also showed few that had resulted from the œstrone. In both there was slight thickening of the epithelium of the uterus masculinus and urethra, and in one, No. 177, the prostatic glands were relatively reduced in number—as occurs when œstrone alone is injected. Both prostates were enlarged.

The prostate of the animal, No. 131, that received a single injection of androstanediol benzoate on the first day of its course of œstrone injections was also enlarged, and showed the typical changes which œstrone alone produces. The male hormone had produced no effects characteristic of itself, and also failed to inhibit those of the œstrone.

DISCUSSION

Testosterone propionate is much more effective than testosterone in suppressing the effects that œstrone has on the prostate of the rhesus monkey. Thus a total of 10 mg. of the propionate given in two injections at weekly intervals proved more effective from this point of view than 35 mg. of testosterone administered in 14 equal daily doses. This finding is fully in keeping with that of Miescher and his co-workers,[2] and of Parkes.[3] The index of relative potency studied by these workers was the capacity of the compounds to increase the weights of the prostate and seminal vesicles of castrated rats. The failure of a single dose of androstanediol benzoate given at the beginning of a 14-day course of œstrone injections (No. 131) to suppress the effects of the œstrone is also not surprising in view of Parkes's finding that this preparation has a negligible effect on the growth of the rat's accessory reproductive organs as few as 5 days after its administration.[3] It may be noted that the 100 mg. of androstanediol benzoate given No. 131 are equivalent to 70 mg. of free androstanediol, and that this amount of androstanediol divided into 14 equal daily doses will suppress the prostatic effects of 100γ of œstrone given daily for 14 days.[3]

Androstanediol suppresses the prostatic effects of œstrone when administered in a proportion of 50 to 1. Progesterone failed to do so in a proportion of 20 to 1.[3] A ratio of at least 50 to 1 was found necessary in order to inhibit the cornifying effect of 6 rat units of œstrin when injected over a period of 6 days.[5] More recently it has been shown that the action of progesterone on the endometrium of the rabbit is completely inhibited by 1/75th of its weight of œstrone, and also that some inhibition may still be effected by œstrone in a proportion of 1 to 200.[6] The experiments reported in this paper show that testosterone propionate can effectively inhibit the prostatic effects of œstrone when given in a ratio of 7 to 1, and it is possible that an even lower proportion may be found to be effective.*

A ratio as low as this does not, however, suppress the external effects which œstrone produces, and the present experiments suggest that the circumgenital skin changes would not be inhibited unless the ratio of testosterone propionate to œstrone were in the neighbourhood of 50 to 1. The previous experiments with androstanediol[3] also showed that this area of skin is much more sensitive to œstrone than is either the urethra or prostate. The greater reactivity of the skin is, however, only temporary, for when the action of œstrone is more prolonged than it was in the present experiments, the circumgenital skin ceases to respond, whereas the urethra and prostate become profoundly altered under the influence of the œstrogenic hormone. It is to be noted in this connexion that when œstrone is given simultaneously with male hormone, the separate effects they produce vary considerably. The anatomical and histological picture might be entirely representative of the action of the œstrogenic hormone. On the other hand, the effects of this hormone might be limited to the external skin only, or to the skin and distal part of the urethra, or to the upper urethra, uterus masculinus, and prostate as well, these different pictures of œstrogenic action being accompanied by equally varying pictures of male hormone action (cf. No. 174).

Weekly injections of an adequate amount of testosterone propionate fully protect the prostate and urethra from the effects of œstrone even when the latter is administered daily. Fortnightly injections, in a proportion of about 20 to 1 (Nos. 179 and 159), are almost as effective. Three-weekly injections are not effective from this point of view (No. 174). This prolonged action of testosterone propionate in suppressing the effects of œstrone is in keeping with the prolonged effect it has on the growth of the accessory reproductive organs of the rat.[2]

This fact is important from the point of view of the clinical use of the compound. It seems highly unlikely that injections need to be given more frequently than once a week, and there can be little doubt that injections spaced as widely as once a fortnight would also prove effective. The present experiments also show that no adverse results follow the injection of as much as 50 mg. of testosterone propionate in a single dose.

SUMMARY

Testosterone propionate will inhibit the effects which daily injections of œstrone have on the prostate and urethra of immature rhesus monkeys if the total amount given (divided into weekly doses) is equivalent by weight to seven or more times the amount of œstrone that is administered. According to this index of activity, testosterone propionate is a much more potent compound than either testosterone, androstanediol, or progesterone. Its action is still powerful as long as a fortnight after its injection, and it seems likely that in clinical work the hormone need not be given more frequently than at either weekly or fortnightly intervals.

The testosterone and testosterone propionate used in these experiments were generously provided by Dr. K.

* Attempts to counteract the prostatic effects of œstrone both with cholesterol and with epicholestanal have been continued,[3] but have been rewarded with but slight success. The possibility that substances which are not sex hormones can neutralise the effects of œstrogenic hormones is important from more than one point of view, and not least from that of the recent demonstration of the œstrogenic power of compounds which are not known to be related chemically to the natural sex hormones.[7]

Miescher and Dr. R. Meier of Messrs. Ciba Ltd., to whom I should like to express my warm thanks. The œstrone was provided by the Organon Company, through the very kind courtesy of Dr. Tausk and Dr. A. Macbeth. To Dr. A. S. Parkes, F.R.S., I am grateful not only for the androstanediol used in experiment 131, but also for the helpful interest he has shown in the work. The monkeys were purchased with the aid of a grant from the Medical Research Council.

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COMPLEMENT TITRE IN ACUTE NEPHRITIS

WITH SPECIAL REFERENCE TO CAUSATION BY REVERSED ANAPHYLAXIS *

BY C. E. KELLETT, M.D. Camb., M.R.C.P. Lond.

MEDICAL REGISTRAR AT THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE

THE complement of the blood has been defined by Muir as "that labile substance of normal serum which is taken up by the combination of an antigen and its anti-substance (immune body)." When such a combination takes place in vitro the complement is "deviated"—i.e., it is no longer free. It seems reasonable to suppose that, if the same thing happens in vivo, changes in the free complement might be detected in diseases where antigen-antibody combination occurs. Browning (1912–13; 1931) suggests that such changes are in fact slight and of little significance. "In general," he states, "the changes in disease have thrown little light on the question of the origin or function of complement"; and the reverse is presumably equally true. Nevertheless I have felt that if gross antibody-antigen reactions are taking place in the body, then there should be changes in the complement content of the blood, and that the recognition of these changes would in turn provide evidence as to the existence of antibody-antigen reactions in man.

For the purpose of this investigation a method was elaborated for determining the titre of complement which appeared more accurate than those commonly employed and which also had the advantage that it allowed the results to be recorded as percentages:

Venous samples of blood were collected, using a syringe with a relatively wide-bore needle (No. 12), and were allowed to clot in previously autoclaved test-tubes for 4–5 hours before the actual test was carried out. In this 0·1 c.cm. of the serum so obtained was added to 1 c.cm. of a 3 per cent. suspension of sheep red blood-cells. These had previously been washed and suspended in 0·85 per cent. saline and sensitised by the addition of 0·1 c.cm. of standard Immune Body (B. & W.) to every 20 c.cm. of the suspension. The mixtures were shaken and placed in an incubator at 37° C. for one hour. They were then spun down in a centrifuge at approximately 3000 revolutions per minute for three minutes. 0·5 c.cm. of the supernatant fluid was added to 1 c.cm. of decinormal HCl, and the hæmoglobin present estimated exactly five minutes later in a Zeiss hæmometer. This hæmometer expresses its results in terms either of grammes or of percentages, and we adopted the latter.

In order to make them comparable the total amount of hæmoglobin in the suspension which had previously been adjusted to contain approximately 100 per cent., and never exceeded 120 per cent., was determined, and the figures obtained in each experiment adjusted to a percentage. The tests were invariably carried out in small batches of 6–8 samples, most of which were from cases in whom one would expect a priori that the complement would be normal.

Figs. 1 and 2 summarise the results in this, the preliminary, investigation. Often several determinations were made, at weekly intervals, but for the purpose of these charts the first is the one recorded. The age has been indicated in every case, and also the sex, which (owing to the distribution of the beds in the hospital) was usually male. The cases have been subdivided into several main groups (Fig. 1) and one large miscellaneous group (Fig. 2). It is apparent that in the great majority of cases (as in di Renzo's series, 1929) the level of blood complement was remarkably constant, the percentage, according to our method, being somewhere between 80 and 90. Even with a low red cell count (as in the four cases of pernicious anæmia where the counts at the time of taking the complement were 1·44, 1·85, 1·04, and 2·4 millions), the complement level remained high. There were, on the other hand, certain conditions in which the complement was low: thus in many rheumatic cases the complement diminished, and in some cases of nephritis it almost disappeared. It is with the significance of the changes in this last group that this paper is chiefly concerned.

CASES OF NEPHRITIS

CASE 1.—A boy of 15 was admitted under Dr. George Hall on Dec. 12th, 1935. He had been ill for several weeks with a cough, sore-throat, and cold in the head, and for the past week or ten days had been troubled with headaches and drowsiness. Three days before admission he suddenly became blind. On admission he was found to be drowsy, but he could be roused and was rational. He was pale, his face was slightly puffy, and there was very slight œdema of his feet. His pulse was full and bounding, and his blood pressure 180 systolic and 100 diastolic. His pupils were widely dilated, the retinæ redder than normal, and the veins were full. Though he was quite blind there were no other gross findings in the eyes. He passed very little urine, and this contained large quantities of albumin, red blood-cells, pus cells, and casts. His blood-urea was 87 mg. per 100 c.cm., and his cerebro-spinal fluid was otherwise normal. Within three days of admission he recovered his eyesight, and his nephritis gradually cleared up. At the time of his discharge his standard blood-urea clearance (corrected for body size) was 21·2 c.cm. per minute, or 39 per cent. of normal average, but two months later, on April 24th, 1936, it had risen to 69·5 c.cm. per minute, or 93 per cent. of normal average.

Fig. 3 illustrates the changes in this child.

CASE 2.—A boy, aged 10, was admitted under Dr. George Hall on Feb. 11th, 1936. Three weeks before his illness he had had a sore-throat. He had been in bed for two weeks before admission, and the state of his urine had been noted by his doctor on the third day of his illness. On admission he felt quite well and was cheerful and lively. His face was slightly puffy, and there was a very slight œdema of the feet. In the folds of the skin of his axilla and groins there were patches of dry desquamating skin. The tonsils were slightly enlarged and red. The heart was not enlarged. His blood pressure was 130/85, and his optic discs appeared normal. He had no fever, and his pulse remained steady at about 72. The urine contained large quantities of red

* Part of a communication made before the Pathological Society of Great Britain and Ireland in June, 1936.

blood-cells, casts, and albumin. He made a complete recovery.

Fig. 4 summarises the changes in this second case and Fig. 5 gives details of a third, in which the mode of onset was in its own way as striking as in the first.

CASE 3.—The patient, a youth of 20, was admitted under Dr. George Hall on May 6th, 1936. He had been perfectly well until a fortnight before admission, when he had had a sore-throat for four days. At the same time he had a bad headache and felt sick and dizzy, so that he had to go to bed. A week after the onset he felt so much better that he was about to return to work, when he noticed that his feet were becoming swollen and his face puffy. This got worse, and when admitted he was semi-conscious and violently resisted examination. His face was puffy and pale. The legs and feet were slightly swollen. The optic discs were clear. The heart was not enlarged, and the sounds were clear and thumping. His blood pressure was 210/130; six days later it had dropped to 190/130, two days later to 170/111, and a week later to 153/95. His urine contained very little albumin; no red blood-cells were present, nor were casts noticed. Despite this at the time of discharge his standard blood-urea clearance was only 30·8 c.cm. per minute, or 50 per cent. of normal average. During the first week of admission the change in his appearance and manner was exceedingly dramatic. His face, which had been pale and puffy, had become thin and sallow, and his manner agreeable.

The relatively slight changes in this youth's urine, the trace of albumin, and the apparent absence of red cells and casts, suggest that the low blood complement was not the result of impaired renal function, and was therefore simply a secondary manifestation, and of no ætiological significance. That this was so was further suggested by the relatively large group of cases of advanced nephritis (Nos. 6–16) in which the blood complement remained high.

The three cases related above have been under observation during the past eight months; their improvement has been maintained and their complement has remained at a normal level.

DISCUSSION

Comment on the above findings is perhaps premature in view of the relatively small numbers involved. Certain facts do however emerge, from which conclusions may be drawn provisionally.

In all of the cases of typical acute glomerulo-nephritis investigated at the time of admission to hospital the level of the blood complement was unusually low. A similar drop appears to have been noted by Gunn (1914–15) and by Weil and Bucholz (1931) and is mentioned in passing by Browning (1912–13). It might be attributed simply to humoral changes secondary to renal damage; but against this we have the facts that it was almost equally conspicuous in all these three cases, in which the signs of renal damage varied considerably, and that no drop in complement could be detected in most of the patients with relapses or with chronic interstitial

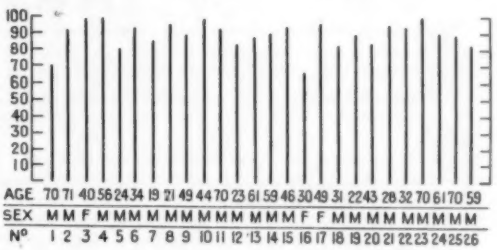

FIG. 2.—Complement titres in a miscellaneous group: 1, diabetes; 2, obstructive jaundice; 3, toxic jaundice; 4, 5, ascites; 6, hæmoptysis; 7, pleural effusion; 8, hydropneumothorax; 9, bronchitis; 10, angioneurotic œdema; 11, neoplasm of prostate; 12, of rectum; 13, of lung; 14, of brain; 15, extreme malignant cachexia; 16, intracranial tumour; 17, head injury; 18, post-encephalitic parkinsonism; 19, 20, cerebral lues; 21, disseminated sclerosis; 22, subarachnoid hæmorrhage; 23, peripheral neuritis; 24, sciatica; 25, cardio-renal failure; 26, malignant endocarditis.

nephritis. In some of these the degree of renal damage was profound: in some the blood proteins were significantly lowered, the albuminuria marked, and the œdema extreme, while in others the blood-urea was as high as 310 mg. per 100 c.cm.

This extreme fall in the complement did then appear to be associated with the onset of an acute nephritis, and in this series the difference between such cases and those in which the condition was chronic or had relapsed was greater than the chart (Fig. 1) would suggest, for Cases 4 and 5, which serve as it were to bridge the gap between Nos. 1–3 and Nos. 6–16, were almost certainly acute but were first seen at a later stage, when it is reasonable to suppose that their complement was beginning to rise. Though it is rather unlikely that this estima-

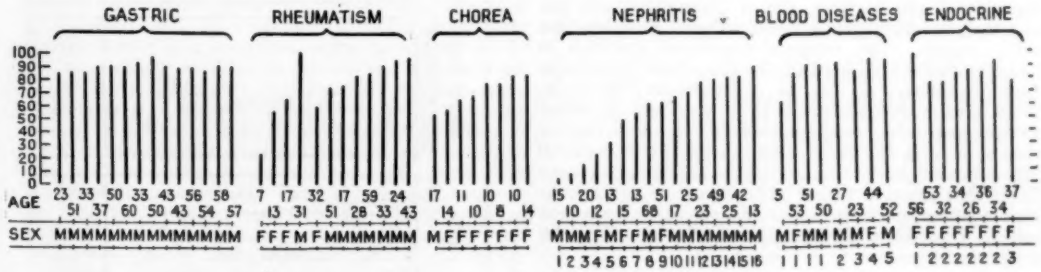

FIG. 1.—Complement titre in patients suffering from various diseases. The 16 nephritis cases are numbered consecutively and some of them are described in the text. The group with blood diseases are subdivided as follows: 1, pernicious anæmia; 2, polycythæmia; 3, hæmophilia; 4, myeloid leukæmia; 5, lymphatic leukæmia. The endocrine disorders were: 1, myxœdema; 2, exophthalmic goitre; 3, Addison's disease.

tion will always enable a distinction to be drawn between primary acute cases and relapses—whose underlying mechanism may sometimes be the same—it may nevertheless, as in Case 3, throw light on what appears to be the closely allied condition of hypertensive encephalopathy.

The extremely low figures for complement were peculiar to these cases of nephritis and not detected in a whole variety of other conditions, though there

was also a drop in the rheumatic states. In a group of control patients convalescing from scarlet fever, acute sore-throats, or various febrile states, the blood complement appeared to be within normal limits.

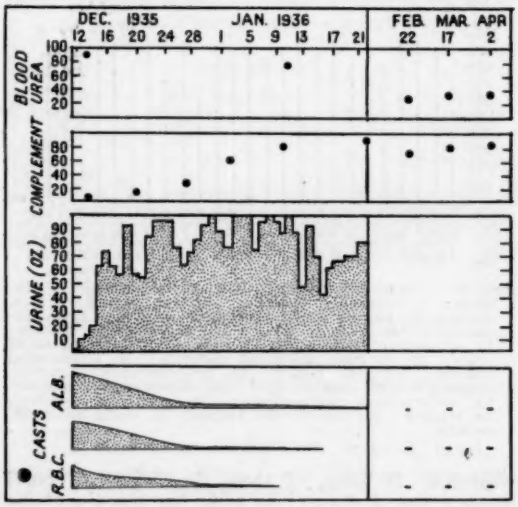

FIG. 3.—Chart illustrating progress in Case 1. Blood-urea in mg. per 100 c.cm. Urine in oz. per day. The three lowest curves show the amount of albumin, casts, and red blood-cells found in the urine.

It is noteworthy that in the three cases I have summarised, in which normal recovery took place, the blood complement gradually rose to a normal level; and, while I have not yet been able to make estimations before an attack of acute nephritis, it seems reasonable to suppose that in these patients the blood complement had been normal before their illness and was reduced with its onset.

Now from Bright's time onwards there have been those who have seen in nephritis not a purely local disorder of the kidneys, but a generalised disorder in which the kidneys are more severely affected than other organs. The extreme extent of the fall in blood complement noted in the cases described above does, I believe, go far to substantiate this view. It is almost inconceivable that a purely localised antigen-antibody reaction should be capable of removing from the circulation almost if not quite all the complement present. (By complement I here mean that fraction which is taken up by the hæmolytic system specified, and which we have reason to believe represents the major part, if not all, the complement present.)

In all three cases the mode of onset was sudden, and in one it was almost dramatic. In all of them the nephritis came on 7–10 days after throat infection. This mode of onset, which is characteristic of the condition, has given rise to the idea that nephritis is comparable in origin to serum disease. As Longcope pointed out in 1929—

"These time relationships led Schick and later von Pirquet to draw an analogy between the specific complications of scarlet fever, such as acute nephritis, and the occurrence of serum disease following one to two weeks after the therapeutic administration of horse serum. From this analogy they conceived the idea that post-scarlatinal nephritis might be explained as a manifestation of heightened susceptibility of the individual to the infection. Pirquet later used the word *allergy* to signify this particular state" (p. 344).

Much further work has since been carried out by Longcope and his assistants in support of this hypothesis. Friedemann and Deicher (1928) have, however, published observations that at first sight seem to invalidate it. Not only do they find that the Dick reaction disappears as rapidly in patients suffering from post-scarlatinal nephritis as it does in those suffering from uncomplicated scarlet fever, but they have also been able to demonstrate the precocious appearance of antibodies in scarlet fever patients contracting nephritis—antibodies that had the property of protecting mice against infection by streptococci. While the conception of a toxic origin of glomerulonephritis has—as Fishberg (1931) points out—been fortified by the discovery of the scarlatinal streptococcus, with its powerful toxin, by the Dicks (1924) and Dochez (1925), and by Trask and Blake's (1924) demonstration of the presence of this toxin in the urine of patients with scarlet fever, there is on the other hand the well-known fact (Pirquet and Schick, 1905; Mackenzie and Hangar, 1930) that a transitory nephritis, comparable with that seen in acute glomerulonephritis occurs in ordinary serum disease.

Now Friedberger and Hartoch (1909) showed that a fall in complement titre occurred in guinea-pigs following anaphylactic shock; a fall, too, was described in man in serum disease by Francioni (1908). The work here reported suggests that the onset of acute glomerulonephritis may also be associated with an extensive antibody-antigen reaction. But where extensive tissue damage ensues, as in anaphylactic shock, the tissue cell also plays a fundamental rôle. As Zinsser (1931) puts it, the experimental work he quotes has "left no possible room for questioning the cellular localization of anaphylaxis in the sense that anaphylactic shock depends upon a reaction which takes place specifically between antigen and antibody, either upon the surface or within certain

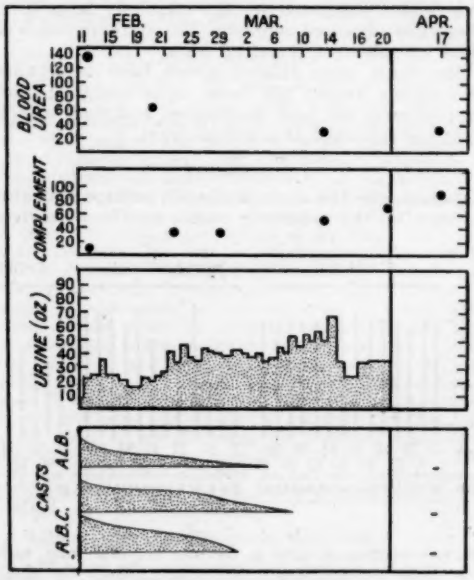

FIG. 4.—Findings in Case 2.

tissue cells." Until recently it has seemed almost certain that this reaction was one between circulating antigen and antibody fixed to, and possibly activated by, the cell. Reversed anaphylaxis—that is, shock dependent on a reaction between circulating antibody and antigen fixed to the cell—was, since it could not be elicited in the guinea-pig, generally held not to occur. Recent work (Kellett, 1935), confirmed and extended by Zinsser and Enders (1936), has however shown that, given proper conditions, shock due to reversed anaphylaxis can be elicited in the guinea-pig. Further work (Kellett, 1936) appears to demonstrate that not only may reversed anaphylaxis be elicited in man, but that this is the mechanism that actually underlies the production of serum disease in man. No such demonstration is here adduced, but it is apparent that this hypothesis of reversed anaphylaxis may furnish an explanation of the clinical findings here summarised. I suggest that acute glomerulonephritis may be a condition, essentially generalised, resulting from a reaction between antibodies elaborated by the body and toxins elaborated by the organisms that played a part in the original infection; the toxins having been fixed in some way to the tissue cells, and more particularly to those of the kidney, in which they will be concentrated and through which they are known to be excreted. The kidneys may therefore be expected to suffer the greatest damage, and as pointed out by Friedemann and Deicher, such glomerulonephritis will arise in patients in whom antibody, possibly prematurely formed, can be demonstrated. In this condition then the hypothesis of reversed anaphylaxis may, as in the closely allied state of serum sickness, resolve many apparent inconsistencies.

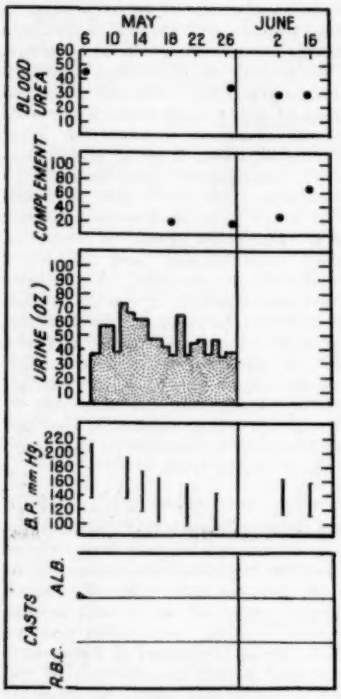

FIG. 5.—Findings in Case 3.

This hypothesis, which I am here advancing, receives independent support from the difficulty that has hitherto been experienced in producing acute glomerulonephritis in animals. It is only recently that Masugi (1934), and in this country Arnott, Kellar, and Matthews (1936), have succeeded in this object, and they have done so by injecting specific anti-organ sera. In their experiments perfused rabbit kidneys were injected into ducks, and the antiserum obtained from the ducks was subsequently reinjected into rabbits. Now this is a procedure which appears to mimic closely the mechanism involved in reversed anaphylaxis; for in reversed anaphylaxis the cell, having absorbed the foreign antigen, may be held to have thereby acquired, partially at any rate, a fresh individuality, which leaves it exposed to the insults offered it by antisera specific for this particular foreign antigen. It is possibly, then, no mere coincidence that the histological findings in these experiments closely resemble those encountered in the acute glomerulonephritis of man.

SUMMARY

A method is described for carrying out blood complement estimations whereby percentage readings are obtained. By this method the blood complement was determined in a variety of cases, in some of which it was followed for several months.

In three cases of acute glomerulonephritis the blood complement was found to be much lower than normal, but gradually returned to normal with recovery. No such drop was noticed in cases of chronic nephritis, even in those showing much albuminuria and raised blood-urea. Reasons are advanced in support of the suggestion that the underlying mechanism of acute glomerulonephritis is one of reversed anaphylaxis.

Estimations of complement may possibly prove useful in distinguishing between types of nephritis and may add to our knowledge of the closely allied state of hypertensive encephalopathy.

It is a pleasure to have this opportunity of thanking Dr. George Hall for permission to publish details of these cases admitted under his care, and also Dr. Drummond, Dr. Nattrass, Dr. Ogilvie, and Dr. Ungley for permission to investigate certain of their cases. My thanks are due too to Dr. Freda Herbert and the department of clinical pathology for their blood-urea estimations, and to Prof. E. M. Dunlop for the facilities so readily granted in his department. This work was carried out with the aid of a grant from the William Dodds research fund.

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AUSCULTATION BY WIRELESS.—The medical aviation department of the U.S.S.R. civil air fleet has devised apparatus for picking up the heart-beats of air-pilots and transmitting them to the ground, where they can be reproduced on a sound film. This apparatus is intended to facilitate the study of the reactions of airmen at high altitudes and under other conditions of stress.

INTRAVENOUS INJECTIONS OF CHARCOAL IN THE TREATMENT OF ACUTE FEBRILE DISEASE

By E. Davis, M.Sc., M.D. Manch.

ASSISTANT MEDICAL OFFICER (GRADE I.), ST. STEPHEN'S HOSPITAL (L.C.C.), LONDON; LATE ASSISTANT MEDICAL OFFICER, CITY OF SALFORD

The recent use of intravenous charcoal for febrile diseases and skin diseases begins with the work of Conklin (1928), who employed it on a large scale in veterinary medicine in doses of 0·001 g. per kg. body-weight, and also treated one human case of resistant boils. In 1934 and 1935 St.-Jacques reported great success from 1000 intravenous injections in 300 human cases, including acute metrosalpingitis, acute puerperal infection, lung infection, and gonorrhœa. In 1934 Gaudier and Démarez, basing their opinion on 25 varied cases, considered the method worthy of further trial, and in the same year Touraine and Ménétrel claimed very good results from intravenous charcoal in lymphangitis, acute rheumatism, epididymo-orchitis, and septicæmias, and encouraging results in gastric ulcer and *B. coli* infections. It failed to save two patients with puerperal infection, but Macnaughton and Gerrie were able to describe a case of severe septicæmia in which it had seemed helpful.

But work on intravenous charcoal had been done before Conklin. Thus Sollmann in 1926, quoting Sabbatani (1913 and 1914), stated that colloidal carbon was harmless on intravenous injection; while in veterinary medicine intravenous charcoal had been used since 1920 (see Reinhardt 1927). Further, it had been given in 1919 by Bingel to patients with pulmonary tuberculosis. Sommerlad (1932) recommended it highly for this disease, but Harms and Merkel (1931) were against its use, because they found it caused harmful reactions.

CLINICAL INVESTIGATION

I have tested the effects of intravenous charcoal in healthy subjects, in patients with skin diseases, and in 123 patients with fever of various origin. The results in skin diseases, some of which seemed promising, have been reported elsewhere (Davis 1936). My experience has been that 2 per cent. suspensions of charcoal injected intravenously into afebrile subjects often cause a rise of temperature, pulse, and respiration (TPR), frequently associated with chills and rigors. To the febrile patients the charcoal was given in 2 per cent. suspension in gum-saline, saline, or distilled water, but the results did not vary with the vehicle, and wood charcoal did not differ in action from animal charcoal. In half the febrile cases the injections were followed by a rise in TPR within a few hours. Often the temperature reached was the highest since the beginning of the disease, and not infrequently it was the maximum for the whole illness. This rise was often followed by an abrupt fall in temperature to normal, usually temporary; the rise and fall were over in eight hours. In the other half of the cases, the TPR was not significantly altered. Subjective reactions were uncommon, although there were occasionally severe reactions. In one very feeble patient, an alarming shock-like reaction was observed immediately after the injection; but in a few minutes recovery began and was soon complete.

For the trial of charcoal in febrile diseases, only those patients were selected who had been at least 24 hours in hospital, and who were not improving, and whose TPR did not seem likely to settle. Only severe cases were given charcoal. The 123 patients received 269 injections of charcoal—usually 4 to 5 c.cm. of a 2 per cent. suspension. In most cases it was given in addition to ordinary therapy. Injections of gradually increasing doses were given at intervals of a day or longer, for as long as the clinical condition and TPR did not show marked improvement. Charcoal was given in 9 cases of acute bronchitis, 2 cases of broncho-pneumonia in children, 9 cases of lobar pneumonia in children, 36 cases of lobar pneumonia in adults, 5 cases of "malignant" endocarditis, 16 cases of acute rheumatic fever, 7 cases of acute tonsillitis, 4 cases of acute pyelitis, 4 cases of septic abortion, 4 cases of puerperal sepsis, 4 cases of advanced pulmonary tuberculosis, and 23 other miscellaneous medical and surgical cases. The results were compared with those obtained in similar control cases of the same disease who were in the hospital at the same time and whose treatment was the same except that they received no charcoal. No significant difference was found between these results; the death-rates were approximately the same and so was the manner of recovery. Our conclusion was that intravenous charcoal was of no benefit in the acute febrile diseases in which it was tried.

PATHOLOGICAL INVESTIGATIONS

White cell counts.—Conklin stated that intravenous charcoal produced a polymorphonuclear leucocytosis within five minutes of the injection, but according to Reinhardt (1927) it had no effect on the blood count. In the present series of white cell counts at least 800 cells were counted, and differences of less than 10 per cent. were not regarded as significant. All patients were at rest in bed for the day of the count. One series (12 cases) was done in pyrexial disease, and a second series (20 cases) in convalescent patients and afebrile disease. Counts were taken immediately before the charcoal injection, and a second count about five hours later. Counts were also taken in febrile and afebrile patients, immediately before, and five hours after, control intravenous gum-saline injections of the same dosage as the charcoal.

It was found that at the fifth hour half the afebrile cases responded to charcoal with a leucocytosis of 45 per cent., and half the febrile cases with a leucopenia of 20 per cent. The remaining cases showed no change. Gum-saline had no significant effect on the white cells in febrile cases, but was followed by a leucocytosis of 50 per cent. in afebrile cases. The latter finding complicates the interpretation of white cell changes. There was no obvious relationship between the white cell change and the severity of the reaction, or between the white cell change and the alteration in temperature between the times of the counts. Some cases showed a leucopenia in two hours, and a leucocytosis in six hours.

What happens to the charcoal injected?—Suspensions of finely divided carbon (Indian ink) when introduced into the body are stored by the histiocytes (macrophages) of the reticulo-endothelial system (Capell 1929 and 1930). (The amounts of Indian ink injected were relatively much greater than the charcoal doses in man.) Touraine and Ménétrel (1934) and Ménétrel (1935) stated that the charcoal is found in the lung, liver, spleen, marrow, and suprarenal even long after the injection.

To answer this question I performed post-mortems upon several cats injected with charcoal. Naked

eye, there was evidence of much charcoal in the lungs, and in one case the liver was very dusky. In autopsies on 8 patients who had been treated with charcoal no abnormality was detectable with the naked eye. Sections of lung, liver, kidney, heart, and spleen were made from the cats and from several human cases, and charcoal particles were found in the lungs, spleen, kidneys, and liver. Large charcoal particles could be seen plugging the small arterioles; smaller ones were observed in polymorphs and reticulo-endothelial cells.

COMMENT

It is of interest to compare the results obtained with charcoal, with those for the injection of colloids and proteins (see Bray 1933, and Steabben 1925 and 1926). Thus Lüdke (1920) believed that an artificial crisis could be induced by intravenous colloidal injections in acute febrile disease. After charcoal, too, an abrupt fall in temperature (but usually temporary) has often followed. When the effects of injections of charcoal are compared with those of colloids and proteins, striking similarities are seen—e.g., pyrexia, chills and rigors, and shock reactions. Protein shock treatment is contra-indicated in states of exhaustion following prolonged illness, and in such cases shock-like reactions followed the use of charcoal. Again, the temperature response to intravenous charcoal is very similar to that following milk injections (Rodin and McBride 1927) and vaccines (Culver 1917, Scully 1917). Further, the white cell changes following injections of protein and vaccines (Rodin and McBride 1927, Hunt, Ervin, and Niles 1935, Harris and Schattenberg 1931) resemble those found for intravenous charcoal on afebrile patients.

SUMMARY

1. Charcoal was given by intravenous injection to 123 patients suffering from acute febrile disease and to an equal number of controls. No benefit from the charcoal was observed.

2. In half of a series of 20 afebrile patients an average leucocyte increase of 45 per cent. was found five hours after charcoal injections, while in half of a series of 12 febrile patients the corresponding finding was a 20 per cent. decrease. (Gum-saline produced a leucocytosis of 50 per cent. at the fifth hour in afebrile cases only.) No relation was found between the white cell changes and the severity of the reactions after charcoal.

3. The response to charcoal injections in several ways resembles the response to injections of protein and colloids.

It is a pleasure to thank Dr. H. Osborne, medical officer of health, and Dr. J. D. Giles, medical superintendent of Hope Hospital, Salford, for allowing me full facilities for this investigation; Dr. W. Mackay, physician to the hospital, for suggestions and help; and Prof. A. D. Macdonald, Prof. S. L. Baker, and Dr. G. J. Langley of Manchester University, and Prof. E. St.-Jacques of Montreal for their interest. I am grateful to Mr. S. E. Melling, F.I.C., for efforts to supply me with improved charcoals, and to Pharmaceutical Specialities (May and Baker) Ltd., and Messrs. Gerrard and Sons, Swinton, for generous supplies of charcoal. Cordial reference must be made to the coöperation of Hope Hospital staff—medical, pathological, and nursing.

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PALPEBRITIS FROM EYELID "SHADING"

By Henry C. Semon, D.M. Oxon., F.R.C.P. Lond.

PHYSICIAN TO THE DERMATOLOGICAL DEPARTMENTS, ROYAL NORTHERN, HAMPSTEAD, AND KING GEORGE GENERAL HOSPITALS

Tinting of the eyelids, apart from tinting of the lashes, is now adopted by increasing numbers of women in all ranks of society. It is being fostered by the manufacture of appropriately coloured pigments and dyes of varying composition and cost. There is nothing novel in the practice. Actresses are familiar with the stage effects afforded by judicious application of the right colour in the right place.

So long as it was confined to the "professional" and the demand was relatively small, little or nothing occurred to draw medical attention to the ill effects which might ensue. It is a fact, moreover, that only one or two "shades"—e.g., black, or varying degrees of it, manufactured from various forms of carbon (lamp-black, vegetable and animal charcoal, &c.), incorporated in a suitable base—were procurable. Such preparations, provided the base or vehicle (usually an indifferent oil or ointment) was neither too alkaline from admixture with a soap, nor rancid from decomposition, would be relatively harmless; for carbon is the end of all things and therefore inert, unless its particles are gritty.

The position now is different. The beauty specialist, aided and stimulated by new methods in the production of fine chemicals, vies with the Parisian dressmaker in issuing his fashion edicts, and, as all smart women know, you can match your eyelids not only to your complexion (itself a changing factor), but to suit the varying demands of light and shade, boudoir and ballroom, day and night!

Is it surprising then that there is a whole series of colours, and varying shades of the same colour, available for that one purpose alone? And this is where mischief is born, for without the coal-tar derivatives, as in all the other dyeing industries, the technique of the chemist is cramped. He can provide us with only a limited range of colour from quite innocuous substances. There are calamine, carmine, ultramarine, umber, and indigo, and many salts of less innocuous elements such as lead, arsenic, sulphur, and antimony. Quite apart from the question of their toxicity they cannot vie in convenience or effect

(*Continued from previous column*)

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" " : Ibid., 1926, vii., 141.
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with the cheaper and more easily standardised derivatives of the aniline group which are beginning to occupy the same relative position as para-phenylinediamine in the dyeing of human hair and animal furs.

Just as with them, the efforts of the chemist are directed to diminishing or eliminating their latent toxicity, which as we now know is bound up with the variable susceptibilty, acquired or inherited, of the individual concerned. In Case 4 here recorded the patient had been applying two "shading" preparations, consistently purchased from the same firm, for a period of four years, and must presumably have acquired her sensitivity. It was her case that led to an interview with the chief chemist of the firm concerned, and I am beholden to him for his courtesy in affording the following information.

The manufacture of the "shades" follows the same principles as are employed in dyeing furs. The dye is "bound" or fixed so that it becomes chemically inert, to another substance—in this case aluminium oxide or barium sulphate—before it is mixed in the correct percentage with its vehicle or base. In such a fixed condition there should emerge no trace of colour in certain chosen solvents, such as saline solutions of the isotonic strength of tears, or fatty substances corresponding in composition to the sebaceous secretions of the eyelids. The possibility of a rancid or super-alkaline vehicle is eliminated (in his laboratory) by using only mineral substances such as petrolatum, of varying melting points, according to the consistency required. It was stated that in the cheaper samples, soaps were sometimes used as ingredients in the vehicle, and to counteract their alkalinity, superfatting agents such as lanoline (which might go rancid) added to the mixture. The combination of dye with alumina or barium sulphate is termed a "lake," and it was emphasised that lakes only were employed by his firm, and that lakes could not possibly give rise to dermatitis *if they were free from impurities*—i.e., from unfixed traces of the particular dye employed. The contingency should, he thought, be minimised by using only neutral substances such as petrolatum for the vehicle in which the lake was applied. Physically speaking, every particle of the lake was thereby surrounded by a thin film of mineral oil which should prevent them from coming into actual contact with the skin itself.

A study of his argument might incline the reader to conviction were it not for the facts now to be recorded.

CASE RECORDS

CASE 1.—Mrs. H, aged 39, consulted me on July 17th, 1936, for severe irritation all over the face, but concentrated chiefly on the eyelids and the skin below the orbits, symmetrically. There was no lacrymation or conjunctivitis, but there was marked *palpebral œdema*, and an eczematous erythemato-vesicular eruption of the skin over the maxillary and suborbital regions. She had had a similar attack in the previous December. The condition suggested a reaction to some external irritant, and on questioning she admitted applying blue "eye-shade" by a well-known maker of cosmetic preparations for about two months before the first attack, and for about a week before the second. In the interval, when her evening engagements had been few, she did not recollect applying it, and she had been entirely free from all irritation. A patch test on the thigh resulted in a pruritic papular rash after 18 hours. Sedative treatment relieved the symptoms promptly, and there has been no relapse to date.

CASE 2.—Mrs. G, aged 35, who had previously consulted me for sensitivity to the sun, first apparent in Vienna, in June, 1935, came again towards the end of July, 1936, with a somewhat similar eruption on the face and *pronounced œdema of the eyelids*. She admitted applying a green and blue pigment stick (some trace of the latter colour was apparent on the right upper lid), and refuted the possibility of trouble from that source as she had been using it for over two years! A patch test on the forearm was negative to the dye but there has been no recurrence since she gave up the habit. Looking back on this case I am inclined to think that the first diagnosis of solar dermatitis in 1935 was probably erroneous.

CASE 3 was referred for diagnosis and treatment by an ophthalmologist. The patient, a woman of 21, had been using both an eye-shading preparation and a brown eyelash pigment on and off for about a month, and the patch test applied on July 27th, 1936, was strongly positive for the latter. There was acute œdema of both lids, and lacrymation—a symptom not observed in the other cases. There was no conjunctivitis or photophobia. Examination with a lens revealed traces of the pigment on both upper and lower lid margins. Chemical analysis of the preparation established the presence of Bismarck brown, which has been scheduled as a skin irritant,[1] and is derived from meta-phenylene-diamine, which with para-phenylene-diamine has become notorious in fur-dye dermatitis. The eye-shade pigment contained only ultramarine, which was stated to be harmless in itself, but the slight excess of alkali present was undesirable, and might cause dermatitis. The analyst drew attention to a paper[2] in which much of the trouble ensuing from toilet preparations of this kind is ascribed to the perfumes and essential oils incorporated.

CASE 4.—Mrs. T, aged 52, had been using a green shade at night and a blue by day for four years. It had been obtained from the same firm consistently, and without ill effect apparently, until Oct. 22nd, 1936, when severe irritation developed on both sides, more so on the left lower lid. On examination there was some œdema of the lower lids of both eyes, and on the left lower additionally a small ill-defined brownish patch of infiltration, adjoining the punctum lacrymale, and just palpable to the finger. She had been trying to relieve the itching with golden ointment. With frequent applications of boric lotion in the form of compresses, and a cold cream, the symptoms of itching subsided in four days, and when she was again examined on Nov. 12th all trace of the patch of induration had vanished. The patch test to the blue colour was negative.

COMMENT

I think the evidence here recorded will be sufficient to convince all but the most sceptical of the possibility of inflammatory response to the more commonly used eyelid pigments, and nothing that the chemist can adduce will entirely obviate the risk if aniline dyes—no matter how treated or mordanted—continue to be employed in their manufacture.

The test as regards solubility in saline, or fats, is not reliable, for it overlooks the possible effects of changes in the pH values of perspiration, or of other and less ascertainable alterations in the composition of sebum. The effects, physical and chemical, of direct sunlight, changes of temperature, and the presence, especially in towns, of sulphur dioxide, are ignored in such tests. From the dermatological point of view it will be safe to add that there is scarcely a more delicate epidermal covering than that of the eyelids in the whole integument, and that this fact may account for the occasional failure to bring off a patch test in other areas more toughly designed, such as the forearm or back.

In any case it would be very unwise to exclude the possibility of a dermatitis on the eyelids being due to an eyelid pigment because the patch test failed to provide the proof. If however legal action were being contemplated such evidence would of course be of great importance. The epidemic of dermatitis from dyed fur, reported on by A. C. Roxburgh,[3] among others, demonstrates the varied response of individuals to the same dye, the preliminary incuba-

[1] Cox, H. E.: Chemical Aspects of Dermatitis, Jour. Soc. Chem. Indust., Oct. 9th, 1936.
[2] Baer, H. L.: Arch. Derm. and Syph., 1935, xxxii., 726.
[3] Brit. Jour. Derm. and Syph., 1925, xxxvii., 126.

tion period in most of the cases, and the apparent shortening of the incubation-time in regular wearers. It is to be expected that the same factors will apply in the case of eye-shading pigments if aniline dyes are utilised.

AMAUROSIS IN PERNICIOUS ANÆMIA

By Charles R. Box, M.D., F.R.C.P. Lond., F.R.C.S. Eng.

SENIOR PHYSICIAN TO THE ROYAL MASONIC HOSPITAL; CONSULTING PHYSICIAN TO ST. THOMAS'S HOSPITAL AND THE LONDON FEVER HOSPITAL

Prof. Henry Cohen's communication on optic atrophy as the presenting sign in pernicious anæmia, published in The Lancet on Nov. 21st, prompts me to send the following notes.

A doctor, aged 67, was admitted to the Royal Masonic Hospital on June 21st this year on account of an unexplained failure of vision. The history was as follows. He had when a young man suffered in the East from malaria and dysentery. With this exception his health had been good as also that of his wife and son. No special diseases could be traced in his family or relatives. The patient was a light smoker and abstemious. Two months before admission to hospital he began to notice tingling in his hands and feet with stiffness of the knees. Also a rather severe attack of diarrhœa ensued which lasted for a fortnight and caused much loss of weight. Soon after the onset of these symptoms all his teeth (15) were removed at two sittings under gas, with one day's interval. Four days later he collapsed and his vision suddenly failed. He was seen by two eye specialists who finding very little are said to have attributed his loss of vision to "opacities in the vitreous."

On admission to hospital the following were outstanding features of the case. With the right eye the patient could only count fingers, and the left vision was only 6/60 improved to 6/12 by plus glasses. Retinal arteries were small. Fine vitreous opacities were present in both eyes, in the right there was in addition a small macular hæmorrhage. The left field was full. Mr. J. M. Cardell who made the examination wrote: "I suggest a Wassermann test. I am not satisfied that the loss of vision left eye is due to intraocular causes. The left fundus looks unhealthy." Examination of the cardio-vascular and respiratory systems had negative results, but the knee- and ankle-jerks were only obtained with the greatest difficulty, and one ankle-jerk was thought to be absent. There was no cutaneous anæsthesia or analgesia, but the vibration sense over both legs and up to the costal margin was absent. The cerebro-spinal fluid proved perfectly normal with a negative Wassermann reaction. The W.R. was also negative in the blood. Although the patient was not markedly pallid the nervous symptoms prompted a blood count with this result:—

Red cells ..	.. 2,700,000	Polymorphs ..	.. 68%
White cells	.. 6000	Lymphocytes	.. 23%
Hæmoglobin	.. 54%	Eosinophils ..	.. 3%
Colour-index	.. 1·0	Hyalines	.. 5%
		Basophils	.. 0
		Myelocytes	.. 1%

The red cells showed anisocytosis and punctate basophilia. Later measurements of their diameters gave results 7·6, 7·5, and 7·3 μ. This blood count was followed by a fractional test-meal which showed complete absence of free HCl.

It is not necessary to recount the weekly blood examinations. These showed a steady improvement. On Sept. 18th, three days before discharge, the count was: red cells, 5,000,000; white cells, 8400; Hb., 92 per cent.; C.I., 0·92. Treatment consisted of 2 c.cm. Anahæmin injected weekly for six weeks, followed by liver extract and iron by mouth in full doses. At the end of his stay the patient was able to read his newspaper, which he was quite unable to do on admission. The deep reflexes in the legs were more easily obtained but vibration sense was still absent.

The lessons of this case are so obvious that no comment is needed. I am indebted to Dr. Stephen Falla, our senior resident medical officer, for the careful notes on which the account is based.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

At a meeting of this section on Nov. 20th, with Mr. Clifford White, the president, in the chair, a discussion was held on the present position of

Hormones in Obstetrics and Gynæcology

Prof. E. C. Dodds explained that the control of the ovary and testis, and of ovarian periodicity, was vested in the anterior lobe of the pituitary gland. The gonadotropic hormones produced by this lobe stimulated the production of the two ovarian hormones œstrin and progestin—or more accurately œstradiol and progesterone—the latter being formed in the corpus luteum. These two in turn acted on the uterus to bring about the cyclical changes known as menstruation. The gonadotropic hormone also stimulated the pre-puberal testis to produce testosterone, which induced the secondary sexual characteristics of the male and rendered the male capable of reproduction. The thyrotropic hormone of the anterior lobe was also responsible for the continuous stimulation of the thyroid. Hence removal of this lobe was followed not only by atrophy of the genital organs but by atrophy of the thyroid and diminution in the secretion of thyroxine; strangely enough, myxœdema did not result. The injection of a suitable amount of anterior lobe extract caused increased secretion of thyroxine and a rise in the metabolic rate. The suprarenals bore a similar relation to the anterior lobe of the pituitary, while other tropic hormones from the same lobe influenced growth, lactation, the pancreas, and the parathyroids. The posterior lobe of the pituitary produced two substances, oxytocin and vasopressin, one causing contraction of the uterus, the other a rise in blood pressure.

Hormones in clinical use had to be on the market in stable and accurately standardised forms. This consideration limited the discussion to œstradiol, progesterone, gonadotropic hormone, thyroxine, adrenaline, oxytocin, vasopressin, insulin, and parathormone. Prof. Dodds wished to draw attention to the possibility of myxœdema occurring in association with gynæcological conditions such as amenorrhœa, since often the failure of œstradiol or progesterone therapy was attributable to a degree of myxœdema. He had seen many cases where the administration of thyroid extract or thyroxine had increased the patient's sensitivity to those two hormones.

The international unit of œstrin had been fixed at the amount sufficing to bring a mouse into œstrus. The astronomical figures, running into hundreds of thousands, used for proportionate doses in humans alarmed some workers. In reality the quantity referred to as 500,000 units was very small, and it was to be hoped that soon the substances would be described in milligrammes; there was no reason why this should not be so, for they were of crystalline

structure and known constitution. The chemical structure of these hormones resembled that of the carcinogenic hydrocarbons and the possibility of dangerous effects from these so-called enormous doses had been pointed out. Conclusions on this point should be drawn from evidence; it could be definitely stated that œstrone and its derivatives had absolutely no carcinogenic activity when tested in the same way as the carcinogenic hydrocarbons; structurally œstrone and its derivatives were less saturated and resembled testosterone much more closely. On the other hand, Lacassagne had shown that if mice were injected continuously from birth to maturity with large quantities of œstrone, the incidence of carcinoma mammæ increased, though only in susceptible animals. Similarly the production of sarcomata by subcutaneous injection of œstrone had been described. These experiments bore no relation to the physiological use of the hormones and it seemed unjust to limit it on this account; the excellent results from the treatment of kraurosis vulvæ, a precancerous condition, was one of the most potent arguments in favour of hormone therapy. Some had advocated estimation of hormone excretion in the urine before starting treatment, but as there were no standard methods for determining the excretion of these hormones nor for interpreting abnormalities the speaker said that no help could be gained at present from such analyses for non-pregnant patients.

Dr. H. GARDINER-HILL said that in contrast to the achievements of the scientists the results of hormone therapy were generally regarded as disappointing. Perhaps this was because clinicians expected too much: endocrine therapy was essentially substitution therapy, for hormones did not stimulate the glands that secreted them. Considering the results of hormone therapy in various clinical conditions, he said that when delay of puberty was hereditary or due to cachectic diseases it did not call for hormone therapy; but some of the cases in which there was endocrine imbalance responded well to it, more especially those with thyroid deficiency. The anterior pituitary deficiencies were not so gratifying, for they were often due to a serious lesion which itself would be unaffected by substitution therapy. Moreover, the pituitary growth and gonadotropic hormones were not available; the gonadotropic hormone obtained from pregnancy urine was not identical with the latter and was unlikely to help these cases. Œstrin and corpus luteum hormone led to development of the breasts and menstruation only so long as treatment continued. Though these two hormones in association could also reproduce the normal uterine changes in nearly every case of secondary amenorrhœa, the cycle would not continue spontaneously. Oddly enough he had had better results several years ago; using only small doses then, 60 per cent. of the patients treated had continued to menstruate. The results had been attributed to a trigger effect but the underlying reason for the success was not known. It might have been psychological. Selected cases of menorrhagia and metrorrhagia in his experience responded well to corpus luteum hormone. He believed they would also respond to gonadotropic hormone but of that he had had no experience. Thyroid extract was very valuable in thyroid metrorrhagia. The results of treatment of dysmenorrhœa were always difficult to assess because of the psychological factor. Theoretically œstrin should help those cases associated with undevelopment of the uterus and corpus luteum hormone those due to excessive contractility and irritability. Good results had been reported in both types and further trial was worth while.

Some case of diminished fertility could be very satisfactorily treated with thyroid. Anterior pituitary deficiency probably accounted for the majority of the other endocrine cases of sterility, there being either amenorrhœa or anovular menstruation. Failure of ovulation was the commonest trouble, and in his experience pregnancy urine hormone had done no good for it. Some cases of repeated miscarriages were of thyrogenic origin; they too responded well to thyroid therapy. Others were thought to be due to deficiency of corpus luteum hormone and some good results had been reported with pregnancy urine hormone. In his experience œstrin relieved the vasomotor symptoms of the menopause, it cured kraurosis and pruritus vulvæ, and could improve some allergic conditions such as migraine occurring at the menopause. The difficulty was that in full doses it produced menstruation even in one patient of 65. In conclusion Dr. Gardiner-Hill said that the clinical results were not so disappointing if the limitations of endocrine therapy were borne in mind. Anterior pituitary gonadotropic hormone promised well when it should become available, but even then that would only make further substitution therapy possible.

Dr. P. M. F. BISHOP (London) drew attention to two guiding principles of hormone therapy: (1) endocrine deficiency might be due either to deficient secretion or to defective utilisation; (2) local and systemic treatment should be considered apart in evaluating its results. He had been using the vaginal-smear method of Papanicolaou in estimating response to œstrin therapy and had found that small doses (1000 to 5000 units daily by mouth) would for instance induce a typical œstrous smear in a menopausal woman whereas five injections of 50,000 units might fail in a long-standing case of amenorrhœa. He had seen cases of amenorrhœa with an excess of œstrin in the blood and urine yet with a distinctly hypoplastic uterus and undeveloped endometrium; the variations in response impaired the value of hormone estimations. In amenorrhœa "local" treatment in the form of œstrin administration could induce the hypoplastic uterus to grow to adult size, but only in a few cases would it continue to respond to the natural secretions. It was possible that if we had satisfactory therapeutic extracts of the follicle-stimulating and luteinising pituitary hormones, and if we knew the correct timing and dosage, we might be able to restore ovarian function. At present we had only the luteinising factor and probably used too small doses. In metropathia hæmorrhagica a bout of flooding could usually be checked in three or four days by the daily injection of progestin or luteinising extract. This treatment was more effective than ergot, and less discomforting and more logical than curettage; it seemed definitely to contra-indicate hysterectomy in a comparatively young woman. This being a form of local treatment was temporary in effect; attempts at systemic treatment by administering a gonadotropic principle were far less successful. Quite small quantities of œstrin were usually enough to control the hot flushes, headaches, and dizziness at the menopause, and rather larger doses had a miraculous effect on such sequelæ as pruritus vulvæ, atrophic senile vaginitis, vaginal ulceration, and kraurosis.

Mr. T. N. A. JEFFCOATE (Liverpool) said that the theoretical knowledge of endocrinology had increased so rapidly that the clinician could hardly keep up.

The practical application was limited. Progress demanded recognition of failures and he deplored any tendency to gloss them over. The treatment of functional uterine hæmorrhage with gonadotropic and corpus luteum hormones was commonly regarded as one of the few triumphs in organotherapy, but investigation of published cases showed that while it was sometimes helpful it was often useless. Progestin gave almost identical results. Of 79 Liverpool cases of functional hæmorrhage only two-thirds were adequately controlled and a third of these had a recurrence comparatively soon. The treatment, among these cases, had been useful for puberty hæmorrhage (80 per cent. success) and least effective over the age of 40; indeed organotherapy had little place in the treatment of menopausal hæmorrhage. Metropathia hæmorrhagica showed the best results.

Pregnancy in its early stages could not be terminated with œstrin, even in massive doses, but if a dead fœtus was retained in utero its spontaneous expulsion could be brought about by sensitising the uterus with œstrin. Dr. Bishop's present technique was to give 40,000 international units of œstradiol benzoate intramuscularly every eight hours. On the fifth day, if evacuation had not occurred, quinine-and-pituitrin induction was tried. Failing that, the œstrin injections were continued and the same method of induction tried on the eighth or ninth day. The treatment had been successful in 7 out of 12 cases before the twenty-eighth week of pregnancy, taking on an average 2,000,000 units and 140 hours, and in all of 15 cases after twenty-eight weeks, the average dose being slightly less and the average time 97 hours. Speaking of the use of œstrin for uterine inertia, he said he had obtained definite clinical improvement in a fair proportion of uncomplicated cases of primary and secondary inertia; but the results were poorer where there were complications.

Mr. T. N. MACGREGOR (Edinburgh) explained how he differentiated between three types of metrorrhagia requiring different hormone therapy. Some cases were due to early failure of the follicle-ripening hormone as a result of anterior pituitary hypofunction; this was diagnosed by finding resting endometrium on curettage and should be treated by anterior pituitary therapy. Other cases were due to under-development of the uterus and responded to œstrin. Thirdly, in metropathia hæmorrhagica, corpus luteum probably gave the best results. Amenorrhœa also required careful investigation. After excluding systemic disturbances and gross pathological lesions he had found hyperfunction of the anterior pituitary in a few cases and hypofunction in the majority. As the ovarian conditions merely reflected the anterior pituitary function he considered œstrogenic hormones merely subsidiary in treatment. In such cases he gave 5 mg. of œstradiol benzoate twice weekly for five injections and repeated the course after ten days; then after the commencement of bleeding the treatment was continued in the first half of each month for three months. Œstrin was given to patients with uterine hypoplasia until the uterus was normal in size and was then followed by anterior pituitary preparations. The treatment of conditions associated with anterior pituitary hypofunction had become more hopeful since an anterior pituitary substance had been prepared from serum of pregnancy. He had used it for six months with encouraging results, giving 200 mouse units of it together with 200 rat units of urinary gonadotropic hormone.

Dr. MALCOLM DONALDSON suggested that there should be some centre set up in London for the study of these cases.—Mr. EARDLEY HOLLAND urged the keeping of careful records and showed charts which he had been using for the purpose.—Mr. J. W. A. HUNTER (Manchester) had found that the treatment of 52 carefully selected cases had cost £800. He had had good results in a fair proportion of cases of secondary amenorrhœa, pruritus and adolescent menorrhagia, but poorer results in scanty menstruation and no benefit in dysmenorrhœa and sterility.—Prof. JAMES YOUNG ventured to suggest that the great expense of treatment in Manchester was attributable to their not supporting British goods. He sounded a note of warning about the use of hormones for the treatment of habitual abortion. One of his patients had started treatment early in pregnancy and the doctor through a misunderstanding had continued the injections until four weeks after term; the woman had a 13½ lb. baby which she lost, and she very nearly lost her life. He endorsed the good results claimed for sensitisation of the uterus in cases of missed abortion and for menopausal conditions; but he had had two menopausal patients who complained of pain in the breasts after treatment.

Dr. CHASSAR MOIR thought that in assessing treatment consideration should be given to the previous duration of the condition; there should be some measure of likelihood of cure without treatment. He considered that no hormone treatment should be given until the patient had been under observation for six months, and that the results should not be considered successful unless response was obtained quickly and to a few doses.

SECTION OF PHYSICAL MEDICINE

AT a meeting of this section held on Nov. 20th, the chair was taken by Dr. C. W. BUCKLEY, the president, and a discussion on

Short-Wave Therapy

was opened by Dr. E. P. CUMBERBATCH. This therapy, he said, was a first cousin to diathermy, but the frequency of oscillation was much higher: ten to fifty or even a hundred billions a second. The heat generated appeared to play a secondary part, and might not cause rise of temperature or be felt at all. It had been thought that the biological changes were not due to heat, but possibly ordinary thermometric instruments could not measure heat restricted to minute points in a conductor. If the heat could be produced in the depths of the trunk, as was theoretically possible, a great advance had been made, but there was some doubt. Experiments with thermocouples in œsophagus and ureter had shown a rise of one or two degrees, but had not been confirmed as yet. The therapeutic field of short-wave treatment was approximately the same as that of diathermotherapy. Dr. Cumberbatch compared certain diseases treated by short-wave and by diathermy methods. The short-wave method had the advantage that the electrodes need not exert pressure or even be in direct contact with the tissue; heat could therefore be used for boils in the external auditory meatus and irregular surfaces like sinuses. It was insufficient to treat by short waves and nothing else. Spectacular results were obtained, but they did not prove everything. The results from short waves and diathermy were indistinguishable in 62 cases of carbuncle, in furuncle, adenitis, and paronychia. For varicose ulcer both methods were equally disappointing. Septic diseases of bone had yielded

well to short waves according to Schliephake, but Dr. Cumberbatch had failed to confirm this claim. Relief of pain was certainly obtained and healing began, but he had failed to eradicate infection with either method. Schliephake claimed success in intra-thoracic sepsis; in one case in his experience Dr. Cumberbatch had found neither treatment successful; both had given some relief in asthma. Chronic infections of nasal sinuses had remitted in a very few cases, but in the majority there had been no response. In angina of effort short waves had been found more effective than diathermy in a number of patients. Primary glaucoma responded admirably to either diathermy or short-wave therapy.

Mr. H. J. TAYLOR, Ph.D., explained the physical differences between diathermy and ultra-short-wave therapy, and their methods of generating heat. Diathermy developed the greatest heat in tissues of high resistance near the surface. Ultra-short waves offered entirely different problems. As the frequency increased, the displacement current increased, and this current produced heat. The least conductive tissue was not necessarily the one most heated. A di-electric constant came in to determine the heating of any tissue which corresponded with the formula $\rho = \frac{K}{f.\epsilon.}$. For any specific resistance there would be increased heating at increased frequency, without any maximum. Specific resistance changed with frequency, and deductions could not therefore be drawn from existing calculations. In inductothermy the most conductive tissue (vascular tissue) had most heat developed in it. A number of specific effects of ultra-short waves had been claimed—e.g., that at 3·4 m. tumours would be destroyed. No one had ever explained the meaning of the term "specific effect." There was in fact no evidence of any such effect on tumours; any action was due to heat alone. Another false claim made was that there were "surface tension effects." A third so-called effect which had got into the literature was a destructive influence on bacteria; the claim was not new, and had been equally made for the relatively long waves of d'Arsonval. A number of workers had failed to produce it. There was no change in di-electric constant at 3·4 m. On the whole, it must be said that specific effect had not been proven.

Dr. C. B. HEALD welcomed a truly critical spirit brought to new work, and quoted two cases of sinusitis treated by short waves with success at first but ultimately continuing until the original source was traced and removed. In a third case associated with cholecystitis the symptoms had remained after cholecystectomy, but had been entirely relieved by short-wave therapy. The problem was not one of short waves but of fundamental diagnosis. There were clinical experiences not provable in any laboratory; the laboratory must be the clinician's aid and not his master.

Sir LEONARD HILL demonstrated on the excised frog heart the effects of applying an inductotherm coil to the neighbourhood of a long loop of wire encircling the heart. The heat generated caused acceleration of the heart-beat, and the fact that the effect was due to heat was shown by irrigating with cold Ringer solution. Finally, the heart went into heat rigor. Another experiment, with a nerve-muscle preparation, the nerve on the electrodes, showed increased contraction and tetanus under ultra-wave influences, also stopped by cooling. He described other experiments which went to prove that the ultra-short-wave field produced a purely heat effect on normal tissues. The human mouth could be warmed to 102° or 103° F. by ultra-short waves, as by no other means.

Dr. JUSTINA WILSON thought Dr. Cumberbatch had damned short-wave therapy with faint praise. She herself had found it equal in every respect to diathermy, and in some cases to act where diathermy wholly failed. These were in gynæcological work, non-inflammatory surgical conditions, and some chronic diseases. Dosage must be very mild and gradual, and adequate depth effect must be obtained. Daily treatments of six or seven minutes should begin the treatment, working up to 20 or 30 minutes in a fortnight. The depth effect was the crux of the whole thing, and depended on spacing and dispersion of the lines of force. Because of the higher frequency, adequate air-spacing could be introduced. Glass and air alone should be used as di-electrics, and very large electrodes were essential. Mercury and spirit thermometers were useless in the electric field, but a thermometer of quartz and pure benzol had been produced, and showed a rise of one and a half or nearly two degrees in the vagina. Even if there were no temperature reaction there might be a defensive reaction. Even the small Siemens machines gave infinitely better results than diathermy in inflammatory conditions of the adnexa, but the large apparatus was better still. High energy was necessary where vascularity was so poor. The hyperæmia of diathermy was limited by the fact that it was a conduction current, but ultra-high-frequency current could adjust itself and get through fat and bone much more easily. One encouraging feature was the immense improvement in general health. She was convinced that it was not heat alone that caused the improvement in pelvic conditions. Few people realised what a help ultra-short-wave therapy was in injuries of soft parts such as ligaments, whether recent or of longer history, especially if there were circulatory complications. Diathermy was inferior to short-wave therapy in osteoarthritis of the wrist, acute sciatica, and spondylitis deformans.

Dr. A. EIDINOW thought that some short-wave workers tried to make a new physiology and a new pathology, and challenged them to show the effects they claimed. Heat was undoubtedly the cause of the reactions and was a most valuable therapeutic agent. The heat put in should show itself on ordinary thermometers. There was a danger of excessive heating, especially when electrodes were put into the abdomen. He had seen two cases of severe internal hæmorrhage, one of them fatal and the other nearly so. This bleeding of the bowel might be the direct effect of application of electrodes, or might result from toxæmia due to excessive heating. The larger the electrodes, the greater the general pyrexia.

Dr. P. BAUWENS spoke of doses producing just a sensation of warmth; he had found them useful in sinus conditions. Defensive processes were extremely difficult to detect, and short waves in small doses, he thought, initiated or encouraged these processes. The waves could be used in two ways: as a substitute for diathermy or to initiate defensive processes.

Dr. W. K. RUSSELL reported results in disseminated sclerosis, general paralysis, tabes, and rheumatoid arthritis. The results had varied. Chorea did very well, as did gonococcal infections, with electro-pyrexia. He had had good results with varicose ulcer, and sometimes with osteomyelitis and sinusitis.

Dr. GEORGE GRAHAM said that at St. Bartholomew's Hospital five cases of general paralysis of the insane

had done very well indeed, both clinically and serologically. Results had also been striking in gonococcal arthritis; subacute infective arthritis had shown only a little improvement, and the patients proved much more difficult to treat.

ROYAL ACADEMY OF MEDICINE IN IRELAND

A MEETING of the section of obstetrics was held in Dublin on Oct. 16th with Dr. J. F. CUNNINGHAM, the president, in the chair, when a discussion on

Puerperal Sepsis

was opened by Prof. A. H. DAVIDSON. He gave an account of an outbreak of hæmolytic streptococcal puerperal infection, fourteen cases with four deaths, which occurred at the Rotunda hospital in the spring of 1936. It was coincident with a severe epidemic of streptococcal throats in the hospital and in the city, and also with a number of structural building changes taking place in the hospital. Swabs were positive for streptococcal infection in all cases and blood cultures were taken in eight patients and found to be positive in two—both of whom died. Throat swabs were positive for hæmolytic streptococcal infection in seven cases. Ten cases had spontaneous births and in seven cases there was no vaginal interference of any kind. Eight of the patients were in direct contact with droplet infection from a positive streptococcal throat of a doctor or nurse. Three patients developed peritonitis, two of whom died and one recovered. The abdomen was opened and drainage-tubes inserted in each of these three patients. None of them had a positive blood culture. Three patients developed insanity. The treatment consisted in polyvalent antistreptococcal serum, antiscarlatinal serum, and intra-uterine glycerin where the lochia were purulent or fœtid. Prontosil was used in the last case only, with satisfactory results; it was not available in the earlier cases. The cases were isolated in a large ward with separate staff, crockery, and dressings. All the nurses, students, and staff of the hospital had their throats swabbed and any with positive streptococcal infection were sent home or off duty. Vaginal examinations were completely stopped and all operative intervention was cut down to a minimum. Masks were worn in the labour ward and puerperal wards. The importance of spray and droplet infection was, he said, well borne out in this epidemic, showing the necessity of early recognition and segregation of those with infected air-passages.

Dr. R. M. CORBET reported an outbreak of six cases of puerperal infection occurring in the Coombe hospital at the beginning of June, 1936. In one case streptococci were grown from the blood, in two from the uterine swabs. In the four others, although streptococci were seen in the smears from the uterine cavity, no organisms could be grown aerobically. These four patients formed large quantities of pus in the uterine cavity, yet no growth could be obtained. Treatment was with prontosil by intramuscular injection and by mouth, and by intra-uterine douching where any quantity of pus was found in the uterine cavity. All the patients survived. No conclusion was reached as to the origin of the outbreak; at the time of the outbreak there was one patient with an acute streptococcal throat, three nurses off duty with sore-throats and one with scarlet fever, and a swab of the staff showed hæmolytic streptococci in the throats of one assistant and 14 nurses. The patients who were infected had all been in contact with at least three nurses carrying hæmolytic streptococci. The usual precautions of isolation and the elimination of active streptococcal carriers were taken.

DISCUSSION

Dr. G. C. DOCKERAY said that during the epidemic at the Rotunda the rule had been introduced of taking a swab from anyone in the hospital who had the least sign of a cold in the head or a sore-throat, and this would be continued in the future. It was important that no nurse should be allowed back on duty until a release swab had been taken. Dr. Colebrook had recently stated that in his experience about 50 per cent. of puerperal deaths were due to streptococcal septicæmia, and in many of these the infection was contracted from sore-throats. He was of opinion that in the next edition of the rules of the Central Midwives Board sore-throat should be mentioned.

Dr. C. J. MCSWEENEY said that at Cork-street fever hospital since September, 1934, he had treated 52 cases of puerperal sepsis. Twenty were cases of pure septicæmia; of these eight died. In all the fatal cases a pure culture of hæmolytic streptococcus was obtained from the blood. There were two cases of pyæmia, both of which recovered. Of the thirty cases of various types that remained, none died. Out of the fifty-two cases eight died. The place of surgery in the treatment of puerperal sepsis was, he thought, very limited. There was really no treatment of puerperal sepsis because it was not a clinical entity; every case had to be treated on its own merits. Conservative treatment was best. The only serum of value in treatment was scarlatinal antitoxin, given in big doses repeatedly. Glycerin was useful in local pelvic conditions, and Collosol iodine as an adjuvant to serum. No other drug had been found consistently of service. He thought that some cases were discharged too soon from the maternity hospitals. Puerperal septicæmia was much more the result of endogenous than exogenous infection. He felt that the day of the large ward was gone; small wards and aseptic nursing were necessary in every hospital. No mask was of use except a cellophane one; gauze masks quickly got moist and bacilli gathered in them.

Dr. J. MCGRATH said it should be more widely understood that streptococci were not the only cause of puerperal sepsis; staphylococci and coliform organisms also gave rise to sepsis. A swab should be taken from within the cervix and from within the uterus. He had found hæmolytic streptococci in the cervices of women with whom there was practically nothing wrong. Only some of the hæmolytic streptococci were dangerous, and to find out which required expensive sugar examinations. Damp masks were a source of danger; cellophane masks only diverted the current of air and were not really efficacious.

Dr. BETHEL SOLOMONS said that during his seven years of mastership at the Rotunda, when about thirty thousand cases were delivered, there was no outbreak of sepsis. It had been suggested that building operations predisposed to sepsis; during his mastership a new wing had been built. At the Rotunda lately when masks were not worn such an outbreak had occurred; at the Coombe where masks were worn there had been a similar outbreak. Did masks stop an outbreak? It had been proved that many people carried virulent hæmolytic streptococci in their respiratory passages, and he agreed that the Rotunda could not continue the avoidance of masks. If masks were worn there should be a layer of

cellophane between the layers of gauze; this prevented the occurrence of moisture. Nurses and students should be taught not to talk over the genitalia. Small isolation wards were essential. He had always taught that puerperal sepsis consisted of a group of diseases and that it depended on the ability of the accoucheur to find the correct treatment for the individual case. Mild cases would be cured by any drugs; hence the variety of drugs recommended and the cures achieved by different methods. Severe cases required meticulous care in diagnosis. Surgery had a place, but an extremely small one. He was sorry to hear of intra-uterine douches still being given; drainage by tube was safer. He was surprised that quinine had not been mentioned.

Dr. W. P. O'CALLAGHAN said that the absence of fever did not negative the presence of hæmolytic streptococci. In Holles-street hospital the routine swabbing of septic throats had reduced the sepsis rate.

Dr. W. H. ASHMORE said he was convinced that, although endogenous infection might occur, nurses with septic teeth or tonsils were the principal cause of sepsis. Nurses did not realise the danger of carrying on a conversation during parturition. He looked forward to the day when no doctor or midwife would attend labour without wearing a mask.

Dr. ALAN THOMPSON said the most likely route of infection was through the woman's own throat. A probable mode of infection in some cases was an intermittent invasion of bacteria in the blood stream, which infected the uterus and the breasts. He suggested the routine swabbing of women's throats while they were waiting for their confinements.

Dr. T. O. GRAHAM said he did not know how to disinfect an infected throat. If the tonsils were badly infected he enucleated them. By aspiration it was possible to get rid of some of the pus, but the crypts were deep and it was impossible to get all the pus out. He found that 25 per cent. of his patients had hæmolytic streptococci in their throats, and this was, he thought, the proportion in the population as a whole. He painted throats and gave a gargle, but there was nothing else to be done. Antistreptococcal serum was useless; two cases of septicæmia to whom he had given scarlatina antitoxin had recovered. If pus formed in a case of septicæmia, the patient would probably recover; fixation abscess was helpful. He had given up using collosol iodine; prontosil he had found very efficacious.

The PRESIDENT thought that masks should not have less than four layers of gauze and should be changed frequently. Nurses should be watched to see that they did not handle the masks once they had been put on. In Holles-street hospital (of which he was master) before a nurse was allowed to go into the labour ward a swab was taken from her throat and if it was found to contain hæmolytic streptococci she was not allowed to go on duty. Every nurse's throat was sprayed every day. Infection through the air sometimes occurred. There should not be such a thing as an isolation ward; infected patients should be in single rooms. The place of surgery was very limited, but in some cases exploration of the uterus was indicated. He did not think serum was any use unless given prophylactically or in the very early stages.

REPLY

Prof. DAVIDSON said that the real thing about masks was that they should be changed frequently. He had operated for years with masks with only a single layer of gauze. Masks should be made simply, changed frequently, and destroyed after use. In most cases he used at least 150 c.cm. of antiscarlatinal serum; antistreptococcal serum was of no use. He had the strongest belief in glycerin; it drained these cases in a better and safer way than anything else. He did not believe in collosol iodine.

Dr. CORBET said that he looked on intra-uterine douching in general as a dangerous weapon, but in some cases it was useful. Eight days was too short a time to keep patients in hospital, but patients were anxious to get home and if kept for eight days instead of nine it was possible to handle one hundred more deliveries in the year. He thought that the good results of prophylactic serum were largely due to the fact that it was given to patients who were not going to get sepsis anyhow.

NEW INVENTIONS

A RING KNIFE FOR ADENOIDECTOMY

WITH a large curette, however thoroughly it is used, it is impossible to remove all adenoid tissue from the nasopharynx. Owing to the depth of the blade remnants are left especially in the region just behind the choanal orifices. The instrument here shown is a specially shaped ring knife on a bent shaft. After the removal of the main mass of adenoids with an ordinary curette this instrument can be introduced into the posterior part of the nasal cavity, first on one side then on the other, and with a few gentle sweeps the last traces of the most anterior portions of lymphoid tissue can be cleared away. The instrument is also very useful in removing adenoid masses situated laterally in the neighbourhood of the Eustachian cushions.

This instrument can be obtained from Messrs. Mayer and Phelps, 59–61, New Cavendish-street, W.1.

NORMAN PATTERSON, F.R.C.S. Eng.

ELIZABETH GARRETT ANDERSON HOSPITAL.—A new nurses' home is much needed at this hospital, for the nursing staff is at present distributed between a hotel, two houses, and the old nurses' home. These quarters cost over a thousand a year to rent. The new home will cost £50,000, of which so far £20,000 has been raised.

MILLER HOSPITAL, GREENWICH.—It is proposed to change the name of this hospital to the Duke of Kent's Hospital for South East London. The hospital was known as the Kent Dispensary and also as the Royal Kent Dispensary before it was renamed in 1908 after Canon Miller. A new out-patients' department is to be erected, and King Edward's Hospital Fund has given £4000, making a total of £10,500 available for the scheme. The maintenance cost of the hospital for the last financial year was £43,591, and the income £49,257.

REVIEWS AND NOTICES OF BOOKS

Syphilis and its Treatment

By WILLIAM A. HINTON, M.D. Boston. London: Henry Kimpton. 1936. Pp. 321. 15s.

THE author's wide clinical and laboratory experience in syphilology have given him an exceptional insight into the difficulties and problems of this study. His views reflect the modern spirit of doubt and inquiry, which is a natural reaction from the wave of extreme optimism which followed Ehrlich's discovery of salvarsan nearly 30 years ago. But any temptation to wander in the realms of controversy has been strongly resisted and the necessary facts are set forth in clear and concise style. On debatable matters the author's own opinions are given with firmness and decision and mostly the reasons which have led him to such conclusions are stated.

All will agree with Dr. Hinton on the importance of treating the syphilitic patient and not positive blood tests; but his view that serum reactions are of small value in assessing the response to treatment, and in judging the necessity for further treatment, will not receive such ready acceptance. An example of the practical application of these views may be seen in his method of dealing with the young and symptomless patient without signs of active syphilis in whom the serum reactions are positive. He recommends treatment only if the patient is pregnant or contemplates early marriage, or if there are positive findings in the cerebro-spinal fluid; otherwise he advises close observation for one year with monthly blood tests and two examinations of the spinal fluid, and then yearly examination for 15 to 20 years. Treatment is thus withheld unless signs of syphilis appear. This course of action seems hardly likely to inspire the patient with confidence and might easily induce an intractable type of anxiety neurosis.

Dr. Hinton includes mercury in the treatment recommended at all the stages of syphilis, believing this drug to be unexcelled in preventing the development of new lesions. He deplores the modern tendency to replace it entirely with the bismuth preparations. For the treatment of early syphilis he adopts the alternating continuous method and in every such case maintains treatment for three years unless there is some contra-indication. Mostly this involves more treatment over a longer period than syphilologists in this country consider necessary. Stovarsol, the pentavalent arsenical for oral therapy, is condemned outright, an opinion which many who have used this drug successfully in congenital syphilis will not endorse.

This practical and stimulating manual contains all that practitioners and students need to know of the subject. The absence of illustrations and of detailed directions for the administration of drugs is not to be regretted, for the technique of treatment of syphilis can far better be learned through demonstrations; the expert should not ignore this book as too elementary for he is likely to derive profit as well as interest from its pages.

The Diagnostics of Pain

By TH. B. WERNØE. Copenhagen: Levin and Munksgaard; London: Humphrey Milford, Oxford University Press. 1936. Pp. 116. 7s. 6d.

SEVEN lectures delivered in 1934 to medical students and physicians in the University of Copenhagen are here translated into English and published in a neat little volume. Pain in general is subdivided into direct pain, felt at the site of the stimulus which produces it; projected pain, felt at the periphery when irritation occurs of some part of the long path from the end-organ to the thalamus and the cortex; referred pain, felt in the periphery at some spot remote from the stimulus; pains arising in muscle, and in the vegetative nervous system; and psychogenic pain. These groups and the mechanisms involved are discussed and exemplified with engaging clearness and simplicity, though not always with entirely convincing arguments. Much of the ground covered is familiar, but the author refers to some observations and theories of his own, especially to his demonstration of areas of cutaneous anæmia coinciding with the areas in which referred pain is felt in visceral lesions; he thinks that nerve impulses from the viscus are reflected to the periphery, where they somehow cause stimulation of the sensory nerve-endings there and so give rise to pain, which can be abolished by local anæsthesia of the area in question. He offers this as a partial, but not as a complete, explanation of the mechanism of visceral referred pain. In places he seems to walk on rather uncertain ground, as where he accepts lesions in sympathetic ganglion cells as the cause of Raynaud's disease. The book is meant to be a general introduction to its subject, and is to be followed at some later date by a larger work on the special diagnostics of all the pains that human flesh is heir to.

Medicine and Mankind

Edited by IAGO GALDSTON, M.D., executive secretary, New York Academy of Medicine. Introduction by EUGENE H. POOL, M.D., President of the Academy. London: D. Appleton-Century Co. Inc. 1936. Pp. 217. 7s. 6d.

THIS small book consists of eight lectures delivered at the New York Academy of Medicine to lay audiences by outstanding medical men; the object of the lectures, which was "to admit the public behind the scenes and to reveal to them the influences which direct the working of the medical mind," has been remembered in making the collection. The changing relationships between the medical profession and the public, which can be noted in this country in all directions of social affairs, have also manifested themselves in the United States, and nothing could be better for the medical profession than that lay authorities and workers should be able to follow, as they arise, the issues which medicine has to deal with.

The lectures are divided into two groups, four of them being sponsored by the bureau of medical information set up by the Academy under the chairmanship of Dr. J. J. Moorhead, and four of them coming from the Academy's committee on medical education under the chairmanship of Dr. Carl Eggers. Although published with a common object, the chapters have nothing to do with each other. In the first essay, Prof. Benjamin Watson gives a rapid historical sketch of medical history, and in the second chapter another historical contribution from the pen of Dr. Howard Haggard depicts medicine in the days of Louis XIV. He reigned from 1643 to 1715, and it will be seen that under his rule medicine had a unique opportunity of development inasmuch as just before he came to the throne the whole of physiology in relation to medicine had to be transformed by the discovery of the circulation of the blood. An interesting chapter by Dr. Harlow Brooks summarises the contributions of the primitive

American to medicine and gives opportunity for a good story illustrating the influence which suggestive therapeutics was wont to play, and continues to play, among the Indians. An educated and superior "medicine man" brought his wife to a hospital to be operated on for appendicitis which he had diagnosed correctly, saying: "You white men can treat some diseases a great deal better than we can, such things as gall-stones and appendicitis, but I can treat some diseases much better than you can, such diseases as nervousness" (or as he expressed it), "diseases of the spirit. Neither one of us is any good treating pneumonia."

Other chapters, also by men of professorial standing, reveal their import by titles such as "the organic background of mind," and "the common denominator of disease"; and the book closes with a simple exposition of what is meant by vitamins, and a chapter by Prof. Alexis Carrel on "the mystery of death" which closes with the optimistic surmise: "Perhaps, in a very distant future, some genius, greater than Galileo, Newton, or Pasteur, will conquer from life, in the abysses of the body, the mystery of death."

Elementary Physics

For Medical, First Year University Science Students, and General Use in Schools. Fifth edition. By G. STEAD, M.A., F.Inst.P., Reader in Physics in the University of London (Guy's Hospital Medical School); University Lecturer in Physics as applied to Medical Radiology, Cambridge. London: J. and A. Churchill Ltd. 1936. Pp. 559. 12*s.* 6*d.*

Mr. Stead's book has already proved its value, especially to medical students, and it is now to embrace a wider circle of readers, for there are nearly 100 pages of fresh material in the present edition, which should meet the needs of those doing physics for the Higher School Certificate. A variation in type allows the differentiation of the more advanced parts of the subject. We have nothing but praise for this book. The writing is lucid, and the material well selected and illustrated by good diagrams. The last 40 pages, dealing with X rays, radio-activity, and atomics generally, succeed in giving the reader an excellent idea of the unique features embodied in their study. The work can be recommended without reservation.

L'année thérapeutique

Médications et procédés nouveaux. By A. RAVINA. Paris: Masson et Cie. 1936. Pp. 195. Fr.18.

A BOOK containing some 70 concise articles and notes on recent therapeutics will always be welcomed by practitioners, especially when the measures described are almost without exception simple, practicable, and backed up by encouraging results. The book is divided into three parts. Part I. deals with the treatment of certain diseases and symptoms; of coryza, for example, by infra-red rays, of cirrhosis by onion wine, and of heat-stroke by the ingestion of salt solution. Other notes of interest are one on the treatment of eczema by splenic extract, of enuresis by sex hormones and, most important, of diphtheria carriers by powdered neutral O-oxyquinoleine sulphate. Mention must also be made of a method of treating secondary parotitis by injections of Lugol's solution. A series of ten cases without a death is recorded under this treatment. Part II., methods and techniques, deals inter alia with suboccipital puncture and blood transfusion. Part III. is concerned with recent and particular applications of certain substances; of insulin, for example, in the treatment of uterine hæmorrhage of ovarian origin, and of methylene-blue for the cyanosis and dyspnœa met with in acute pulmonary disease. The practitioner who is therapeutically speaking "up against it" will certainly find in this book something else worth trying, even if he suspects that the rationale of some of the treatments suggested would not bear statistical investigation.

Hospital Accounts and Financial Administration

Second edition. By Captain J. E. STONE, F.S.A.A., F.S.S., F.R.Econ.S., Secretary, Birmingham Hospitals Centre. London: Faber and Faber Ltd. 1936. Pp. 278. 21*s.*

IN view of the revolutionary changes which are now taking place in hospital management, governing bodies of hospitals must be glad to avail themselves of every source of authoritative information on the subject. Captain J. E. Stone's book is the result of the patient accumulation of facts, and the expression of these facts in an orderly arrangement provides a reliable picture, administrative, financial, and statistical, of the well-managed hospital. Captain Stone is no amateur. Once chief accountant at St. Thomas's Hospital and now secretary to the Birmingham Hospitals Centre, he has a packed lifetime of experience in this field of social service between those two activities. His gospel is "organisation unit system" of hospital accounts, designed to bring about in the scheme of hospital management economy, efficiency, and a retention of the humanities.

Medical Procedures, Operative and Diagnostic

By MOHAMID IBRAHIM, M.D., M.R.C.P. Lond., Assistant Physician, Kasr-el-Ainy Hospital; Lecturer in Medicine to the Dental School, Egyptian University; and PAUL GHALIOUNGUI, M.D., M.R.C.P. Lond., Medical Tutor to the Faculty of Medicine; formerly Registrar to the Medical Unit, Kasr-el-Ainy Hospital, Egyptian University. Printed by Norry and Sons. Obtainable from H. K. Lewis and Co., Ltd., London. 1936. Pp. 139. 3*s.* 6*d.*

INTENDED for junior house physicians, presumed to be still ignorant of these procedures, and for general practitioners, presumed to have forgotten them, the authors express the hope that this book will provide in a compact form information which is scattered through many books. The hope is vain, for other and better books on similar lines have already appeared. The technique for applying leeches is described, and also that for introducing Southey's tubes into œdematous legs; both these procedures are surely obsolescent, if not obsolete. Apart from the risk of sepsis, most practitioners would hesitate to use Southey's tubes in these days of mercurial diuretics. Describing the technique of vaccination against small-pox, the authors recommend two or three scarifications an inch apart; it is noteworthy that in this country public vaccinators are now only required to make one. The appendix, tabulating the composition of the blood, cerebro-spinal fluid, and pleural effusions would have been more useful had the normal and abnormal cytology of the blood, as well as its biochemistry, been included.

THE LANCET

LONDON: SATURDAY, NOVEMBER 28, 1936

A REGIONAL SCHEME FOR RADIUM TREATMENT

FROM its inception in 1929 the National Radium Commission has adopted as one of its fundamental principles that radium should be loaned to a few hospitals, each of which should form a "centre" serving an area larger than that of its ordinary circle of influence. This was because it was recognised that owing to the scarcity of radium there was not enough for every hospital to have a supply of its own, and that there were not enough skilled workers to serve more than a few centres. Dr. R. PATERSON describes [1] the organisation that has been built up by the Manchester Radium Institute to provide an efficient radium service over a large area, and considers how far centralisation is possible. The central unit at the Christie Hospital and Holt Radium Institute, of which he is director, possesses a large quantity of radium, adequate modern X ray therapy plants, a specialist radiotherapeutic staff, a physicist, a well-equipped physical laboratory, consultants in their specialties, and a clerical staff large and skilled enough to do the intricate work that is necessary for the success of an elaborately organised scheme. Agreements have been made between this central unit on the one hand and voluntary hospitals and public health authorities on the other for the treatment of their patients by the staff and radium of the centre, the treatment to be carried out if possible at the centre itself, but if not at their outlying hospitals. The advantage of these agreements is that local interest and enthusiasm is preserved, the patients more readily use the facilities provided in their own localities than those situated at a distance, and the difficulties of bed shortage are greatly eased.

Dr. PATERSON thinks that the provision of a radiotherapeutic centre for an area with a population of less than 250,000 would be essentially futile and lead to poor work. "To achieve the full advantages of centralisation with a central unit with two or three medical officers and a physicist," he says, "the unit would have to serve exclusively a population of about 1,500,000 to 2,000,000." A unit of this size has been achieved at Manchester by these agreements made with other bodies, and during 1935 out of 2075 patients 873 were referred from the centre and 768 under the schemes. As the radium service is being used by many hospitals its cost has to be borne in part by each of them, and Dr. PATERSON discusses the principles on which such payments should be made. A distinction is drawn between payments by voluntary hospitals —the charge covering only the actual cost of medical services, travelling expenses, and the hire of radium—and payments by public health authorities, who are asked to cover the full value of services given, including maintenance of their patients while in the Institute, and the estimated value of all the services rendered therein. Payment of this kind by health authorities to voluntary institutions, being payments for services received, is not new, but its extension to many parts of the country might help to finance those radium centres which are hampered by the lack of funds. The Radium Commission has acted on the assumption that a centre that cannot keep half a gramme of radium and a whole-time radiotherapist constantly occupied cannot function as an efficient centre, and as time goes on it would appear that these figures are by no means too large. The association therefore of several hospitals to form one unit appears to be inevitable and the organisation of such a centre presents many problems which have to be solved. The Manchester scheme is a bold and ingenious solution of the problem and its full description will be of value to those contemplating similar organisations.

[1] Public Health, November, 1936, p. 41.

WORK AS A REMEDY

As the function of a hospital is to cure, it seems obvious that its governors should make the fullest use of those forces in the patient that most powerfully assist healing. One of the greatest of these is the creative or constructive function. An idle patient is a miserable one, and a miserable patient is not going to get well as soon as a cheerful one. This simple principle was seldom applied, however, until quite recently when physicians in charge of mental hospitals began to discover that "occupational therapy" made a magical difference in their patients' happiness, docility, and recovery-rate. From another angle the physiotherapists took up the new science of re-educating patients who had suffered injury to limbs and joints, and now it is beneficially invading the hospital.

The name "occupational therapy" is not perhaps a fortunate one, but it is difficult to think of a better. At first, of course, the reformers set out to occupy their patients and keep them busy, but the method has broadened into something much wider, for it is now a whole physical, mental, moral, and perhaps even spiritual system of re-education. Its scope and manifold resources were explained by several speakers at the Public Health Congress last week, notably by Mr. H. F. SHRIMPTON, who administers the Children's Hospital, Birmingham, and Dr. RICHARD EAGER, a mental hospital superintendent of long experience. Dr. EAGER, after a visit to Holland, put what he had learnt to such profit that soon three-quarters of the patients in his hospital were systematically occupied. He found that physical drill and folk-dancing became very popular as well as improving the patients' health, and that organised games and dances, in which patients performed themselves as well as watching members of the staff, made a vast difference to the atmosphere of the hospital, and introduced a sociable and homely feeling. As his subject was recreations and amusements, he did not deal much with the side of occupational

therapy which most interested Mr. SHRIMPTON—the constructive side, which trains a man and uses him, and gives him in return for his effort a developed faculty, a usefulness, and often a means of earning his livelihood in spite of his disability. Dr. EAGER finds that to call occupation "work" repels the modern mind, but Mr. SHRIMPTON boldly advocates real work as one of the deepest needs of the hospital patient, and it is now a commonplace experience that the work of the mental hospital's farm, garden, laundry, engine-house, and so on is almost a necessity of life to many patients if they can be given a certain variety in it. HENRY FORD gave his bedridden employees a pile of bolts and nuts to assemble; so far from hating this commonplace work the men begged for it, and became better at it than their healthy mates. To increase the patient's self-confidence, in fact, it is almost essential that the work should be real. This may not apply so much to the mental hospital, but it has been found to apply closely to institutions faced with the problem of fitting blind, crippled, and tuberculous patients to earn their living. At Papworth Hall and in the settlement of the Disabled Sailors' and Soldiers' Mutual Association the patients are taught, not art-and-crafty work, but everyday, sound trades like printing and carpentry, and industries have been built up that will compete in the open market.

Some physicians believe that all illness, and even all injury, is one expression of a psychic problem: nearly all will agree that if the problem is not primary, it is almost always present as a secondary handicap. If, then, the hospital's service is going to be complete each patient should be studied from the beginning with the object of discovering what help can be given him in his re-education for health. If the illness is likely to be a long one he might be started on some form of constructive occupational therapy, suited as closely as possible to his needs, as soon as he is well enough—and that is very early, for even the acutely ill will sometimes benefit from the right kind of occupation. As he gets better, he may perhaps be trained out of his bad mental and physical attitudes and fitted better for living a healthy and useful life so that he will not need to come back. Sometimes, after discharge to a convalescent or continuation hospital, he may need to keep in touch with the out-patient department, where the staff are trained to assist and supervise him in the new activities he has learnt. This is one of the chief functions of the modern hospital as Mr. SHRIMPTON sees it, and one that would make it even more valuable to the community than it is at present. On the other hand, many will feel that the problem of convalescence—the return to life—is one that should properly be tackled by family doctors rather than by institutions. If so (as we have said before [1]) they must be family doctors with sound facilities behind them. Once again we are back at the conception of primary health centres adequately equipped for curative and preventive medicine.

[1] The Problem of Convalescence, 1933, i., 145.

BONE TRANSPLANTATION

THE ingenious method devised by Dr. SVANTE ORELL of Stockholm for the study of bone transplants in the human subject has led him to further practical results.[1] We have already seen [2] how Orell has used the defect, left by the excision of a large slice of tibia for an Albee graft, as a convenient bed in which to implant bone. The active regeneration that followed the subperiosteal implantation of bone led him to try the effect of grafting between the periosteum and bone in the intact tibia. By this expedient he provided a local excess of calcium, at the same time raising from the bone surface the tissue that, rightly or wrongly, has been regarded as a membrane limiting bone production. The result is the formation on the surface of the tibia of a mass of soft vascular spongy bone filling the gap between tibia, transplant, and periosteum. This is the substance Orell calls "os novum" which, by regrafting in various situations in the body, he has used so successfully to repair bony defects and to ankylose diseased joints.[3] The os novum is loosely attached to the subperiosteal implant and to the periosteum, but it has to be chipped off the tibia, so firm is its attachment. The obvious conclusion is that it grows from the shaft of the bone and not from the deep surface of the periosteum. The implant that stimulates the growth of os novum may be fresh bone, but it is not essential to implant living cells, for Orell generally uses bone that has been freed of fat, periosteum, marrow, and of the cellular contents of the Haversian canals. By soaking the bone in warm salt solution, albuminous substances are removed and connective tissue elements are dissolved by warm potash. Nothing remains but the bony framework with its calcium content. This "os purum" is left undisturbed under the periosteum for a month or two and then removed with its attached os novum, ready for regrafting as a whole or in smaller pieces where it is needed. Orell usually grafts os purum and os novum together, but for certain purposes, such as promoting regeneration of the lunate bone after necrosis, or aiding ankylosis of one of the smaller joints, os novum may be employed alone. The ease with which the os novum can be shaped to fit its new bed has been found a great advantage. Orell has been particularly pleased with its value in operations for ankylosis of the vertebræ in tubercle of the spine. Where the splinting function of the graft is needed, as for example in reconstruction of a metacarpal bone, os purum is of more value. In arthrodesis of the sacroiliac joints he has used os novum embedded in a groove in the bones directly over the joint, and os purum outside the bone to serve both as an indication on the radiograms and as a source of calcium. The

[1] Acta chir. Scand., 1934, lxxiv., suppl. xxxi.
[2] THE LANCET, 1935, i., 158.
[3] Acta soc. med. Suecanae. (Lennander-Vorlesung, gehalten in der Schwed. Ärztegesellsch., April 1936.) Stockholm, 1936.

time taken up while the graft of os novum grows on the tibial surface is a disadvantage, but we have Orell's assurance that the patient can be up and about from the second day of the transplantation of the os purum.

What is the fate of these grafts when used to promote bony consolidation? Orell is definitely of the opinion that in the case of os purum the whole of the graft is absorbed; it acts essentially as a source of calcium, and its presence is a stimulus to the connective tissue of the graft bed to form bone. He distinguishes between true osseous connective tissue and extraskeletal connective tissue. The former reacts rapidly, evidence of bone formation being evident in two or three weeks, whereas fibrous tissue such as surrounds the ends of a pseudarthrosis takes months to absorb the graft and form bone. Os novum consists of loosely constructed osteoid tissue, with very vascular and richly cellular young connective tissue. Orell believes that the osteoid tissue is all absorbed, but that the connective tissue remains and is the essential part of the graft. In grafts of fresh mature bone the proportion of osteoid tissue and connective tissue is small, and for this reason they are not so suitable for implantation. The vascularity of the bed which receives the graft is important; where the young connective tissue is well nourished growth will be correspondingly more rapid. Orell believes that the growing connective tissue of the graft meets the connective tissue of the bone, which in its turn is stimulated to growth by the presence of the calcium, and that the two become incorporated. Os purum can readily be implanted without periosteal attachment and is just as active in this condition. This would appear to dispose of the theory that the graft owes its osteogenic power to osteoblasts adherent to the deep surface of the periosteum. Orell has found it unnecessary to excise the fibrous tissue from the ends of a pseudarthrosis, but he advises using a large mass of new bone, and making sure that it is in close contact with the healthy shaft well beyond the broken ends.

One of the most interesting operations described by Orell is the resection of diseased bone, followed by its rapid sterilisation and reinsertion into its periosteal bed. This he has done successfully in two cases of chronic suppurative osteomyelitis, with primary healing in one case. In a case of sarcoma of the upper end of the humerus, the greater part of the shaft was resected, the tumour mass scraped away, multiple perforations made in the shaft, and the bone boiled for ten minutes and reinserted with the aid of a bone peg at its lower end. The patient at the end of six months has developed secondary deposits in the lung, but there is no evidence at all of local recurrence. The reimplanted bone is of course absorbed, but its presence during reconstruction of the shaft maintains the length of the bone and prevents the disabling deformity and non-union dreaded after massive resections. It also provides a local supply of calcium for the formation of the involucrum. All Orell's three patients regained strong limbs with good function.

WORKMEN'S COMPENSATION AND THE DOCTOR

THE drastic Workmen's Compensation Bill, which was refused a second reading in the House of Commons a fortnight ago, raised issues which survive its defeat. It is an old complaint that expert witnesses of all kinds are prone to partisanship and over-statement. In introducing the Bill, Mr. MAINWARING, M.P., elaborated this accusation against the medical profession in compensation cases. Medical witnesses, he said in effect, were partisans and advocates; medical referees were part-timers who might be acting for employers one day and sitting in judgment the next. Both employers and workmen—Mr. Mainwaring was careful not to blame one side only—"can get any medical expert to say anything they want in their favour." The Bill proposed to eliminate the medical referee entirely. Mr. Mainwaring, to his regret, found it impossible to get rid of medical witnesses altogether, but he roundly criticised the "prostitution of medical science." Although, as already noted, he did not charge the employers alone with buying tame experts to give evidence, he and other supporters of the Bill left no doubt that their reforming zeal aims at making generous compensation automatic upon injury to the workman; the medical witness, like the medical referee, is somehow an obstacle to this ideal. The workman, if injured, is to be treated as an industrial soldier whose wounds justify payment and pension at the hands of a prosperous community.

The supporters of the Bill voiced the conviction that at present the amount of compensation available is too small and its basis too narrow, that the employers' organisations are too anxious to belittle or deny the workman's claim, the insurance companies too impersonal and inhuman, the judicial arrangements too indirect and formal, the law itself too blindly obsessed with the citation of decided cases and too little inspired by the supposed intentions of Parliament. For remedy the Bill proposed to wipe out all the existing statutes and to substitute for the law courts a new and independent Compensation Board with exclusive jurisdiction and apparently final and unlimited powers of awarding compensation. The Board was to consist of a legal chairman, two representatives of employers and two of trade-unions, one medical and one financial expert. Its function would be the simplified duty of ascertaining the fact of injury and tendering the victim the appropriate sum out of a single new Accident Fund to which all employers would contribute. Winding up the debate for the Government, Mr. GEOFFREY LLOYD, Under-Secretary of State for the Home Department, offered the observations which we summarised last week (p. 1242). He thought the criticism of doctors had gone a good deal too far, though he was willing to agree that medical views of nystagmus, of which much had been said during the debate, had changed considerably in the past

generation. He realised the objection to part-time referees, but pointed out that there is need of referees who are on the spot and are of high professional standard; in some districts there was not an unlimited supply of medical men and they had consequently to be used for more than one purpose. The question of a possible right of appeal from the absolute decision of the referee is apparently being considered at this moment by the valuable interdepartmental committee over which Judge STEWART presides. The committee, which is investigating several of the problems (including nystagmus) raised in the discussions on the Bill, is taking evidence from all sides, from trade-unions, doctors, lawyers, and officials. It was inevitable that Members of Parliament would prefer to wait till the committee's conclusions are available. Mr. Mainwaring's Bill was, he said, revolutionary. The proposal to oust the jurisdiction of the county court and hand all compensation disputes over to a novel non-judicial tribunal was in itself far too startling for the average legislator who thinks that the usurpation of judicial functions by bureaucratic bodies has already gone far enough. The Bill was rejected by a slender but sufficient majority; it will doubtless reappear anon. Meanwhile the views of its supporters should be pondered. It would be a pity if all trade-unionists were encouraged to believe that the hand of every doctor is against them.

ANNOTATIONS

THE CINEMA IN PSYCHIATRY

THE cinema, penetrating every side of everyday life, is being used increasingly in medicine, and has proved serviceable for recording and analysing neurological abnormalities. Broadly speaking, the most useful neurological text-books are those most profusely illustrated, for the study of many photographs of main-en-griffe, main-de-prédicateur, the various types of dystrophy, and other such problems in differential diagnosis brings home to the reader the essential points in the anatomy and pathology of these disorders. In the allied department of psychiatry the problem is very different. It is on the language that the patient uses or does not use, rather than his appearance, that we form conclusions about his instability, the danger he presents to himself or others, the seriousness of his condition, and its probable duration. Such language may be described but cannot be reproduced effectively in any text-book, and the newly qualified practitioner must chiefly rely on recollections of what he gleaned on a few expeditions to mental hospitals during his student career—expeditions that are not very likely to have left him with clear ideas of the fundamentals of psychological medicine. In such hospitals there is often an immense mass of teaching material, but it can seldom be presented in such a way as to be assimilable. In the talking cinema, we suggest, psychiatry has an instrument not only for entertaining the mentally afflicted, but also for educating the uninitiated. Visits to mental hospitals will still be necessary, but clinical lectures implemented by cinematograph demonstrations to which all can attend—and not merely the few near the patient in the hospital—must impress the essentials of psychiatry on those who both see and listen. They would see the methods the psychiatrist adopts to reveal the disordered thinking. The lecturer could during the silent course of the film draw special attention to the important points without arousing the absent patients' antagonisms or sensibilities. Moreover, by presenting in succession a depressive with hypochondriacal delusions and much affect, a schizophrenic with such delusions and no affect, and an anxiety-laden neurotic with gastric symptoms of a conversion type, certain important points in differential diagnosis could be exemplified.

The clinical demonstration of cases of psychoneurosis is a matter of difficulty and delicacy. But a film could well be made to show some of the methods of elucidation and persuasion with which the milder forms of these disorders are tackled. Such a film might be of first-class educational value.

HELIUM IN THERAPEUTICS

THE low specific gravity of helium as compared with nitrogen (the relation is 2 to 14) has led to the use of this gas as a diluent for oxygen in certain types of dyspnœa. A. L. Barach of New York has recently set out [1] the theoretical basis for the use of helium, adding some clinical observations of his own. The substitution of helium for nitrogen in a volume of air provides a respirable gas mixture which is one-third the density of air. During quiet breathing the influence of this substitution is negligible, but with obstruction in any part of the respiratory tract there may be a saving of effort when the lighter gas mixture is substituted. The technical problem is to exclude nitrogen from the apparatus and to control the percentage of helium. For short periods of administration, such as half to three hours, a closed circuit (rebreathing) apparatus has been used with a mouthpiece or mask. At the beginning nitrogen is washed out of the lungs by a rapid flow of the helium-oxygen mixture (about 15 litres per minute), and the first few breaths are exhaled through a two-way valve. After this the apparatus is fed with the helium-oxygen mixture at the rate of about 4 litres per minute. For more prolonged administration a modification of the oxygen tent made with helium-proof fabric has been employed. In the treatment of asthma, particularly for the patient in status asthmaticus to whom adrenaline and other measures have ceased to give relief, the use of the helium-oxygen mixture has given prompt relief both objectively and subjectively, probably because of the decreased respiratory effort required for pulmonary ventilation with the lighter gas. In patients with obstructive conditions of the trachea, larynx, and bronchi, the use of this new gas mixture has also produced beneficial results in some instances thereby averting tracheotomy. The value of helium with oxygen in emphysema, associated with bronchiectasis or fibrosis or both, is shown by certain records which indicate that smaller concentrations of oxygen are necessary to produce similar restoration of pulmonary function when helium is used as the diluent. The cost of helium may at the moment prevent its more general use, but Dr. Barach explains that a Bill has already passed certain stages making Government

[1] Jour. Amer. Med. Assoc., Oct. 17th, p. 1273.

helium available at a cost comparable to that of oxygen in the United States. After Dr. Barach had related his experience it was pointed out that in certain clinics anæsthetists are already using helium-oxygen mixtures. In Boston when operations upon goitre are in question it is usual for the anæsthetic apparatus to have a cylinder of helium attached.

AN EXHIBITION OF BRITISH ARCHITECTURE

THE Royal Academy is preparing for January and February, 1937, an Exhibition of British Architecture in the Twentieth Century, in which it hopes to show, in a wide variety of examples and without restriction as to style, the best work done by British architects in the past thirty-six years. The work will be classed in six main sections—Domestic, Civil, Monumental, Commercial, Ecclesiastical, Bridges—and will consist for the most part of the architects' own working drawings, illustrated by photographs, perspective views, and models. A retrospective section, surveying British architecture from the seventeenth century, will be included. A representative committee of members of the Royal Academy and other well-known architects has undertaken the selection of the works. Architects who wish to offer one or two examples of their completed work for the choice of the committee in any of the classes mentioned are requested to apply without delay to the secretary, Royal Academy of Arts, Piccadilly, W. 1, for forms and instructions as to sending in works. With the extensive construction, reconstruction, and reconditioning that is now taking place in hospitals, an exhibition giving examples of modern work and theories should be of high value to the medical profession.

THE HEART IN VITAMIN DEFICIENCY

THE fact that there is often cardiac enlargement in beri-beri has attracted attention to the possible relationship of disorders of the heart to deficiency of vitamin other than B. Claims have been made for a scorbutic basis, for example, in cardiac rheumatism, and even vitamin-D deficiency has been suggested as a possible cause of cardiac enlargement in young children. Rabinowitz and Rogers[1] now report a remarkable example of chronic avitaminosis in a four-year-old child with serious affection of the heart which became quite normal following adequate treatment. This child, who had been late in sitting and standing, had been fed on a thoroughly unsatisfactory diet in which the solid elements consisted of some bread, jelly, and cake, the only other food or medicine taken being milk and Karo syrup. When he came under observation there was severe anæmia, hæmorrhages round the gums, fever, and muscular flabbiness. The most important findings, however, were in the cardiovascular system, of which the following is a description: "the pulse was rapid, small, and irregular with the presence of a transitory gallop rhythm. A precordial thrill was present. The area of cardiac dulness was markedly extended to the left axilla. Loud blowing systolic and diastolic murmurs were heard over the mitral area transmitted to the axilla and back, and entirely obliterating the heart sounds. A blowing diastolic murmur was noted in the pulmonic area transmitted down the sternum. The aortic first sound was louder than the aortic second sound, while the first pulmonic sound was softer than the second pulmonic sound." X ray examination of the chest showed much enlargement of the heart shadow. The child was confined to bed and given a varied diet rich in vitamin C accompanied by liver concentrate, iron, and a concentrate of vitamin D. After quite a short period the temperature dropped to normal and the anæmia improved, and after six months the patient was discharged in good health with no evidence whatever of cardiac disease, this regression being confirmed by a normal radiographic appearance of the cardiac shadow. Perhaps the most interesting feature of this unusual case lies in the evidence afforded that murmurs such as those mentioned may occur in the absence of valvular disease.

[1] Rabinowitz, L., and Rogers, E. J.: New. Eng. Jour. Med., Oct. 1st, 1936, p. 621.

A NATIONAL DENTAL SERVICE FOR SWEDEN

GROWING attention has been paid in Sweden during the past twenty years to the possibilities of a comprehensive dental scheme on a national scale, and a committee of inquiry has reported to the Government. The proposals made by this committee, which are described by Dr. Nils Hellström,[1] are ambitious; for skilled dentistry is to be available for every Swede, irrespective of income, from the cradle to the grave. Dental work of a purely æsthetic character does not, of course, enter into the scheme, but otherwise there seem to be no limits to the dental welfare envisaged. It is anticipated that ultimately the public dental service will assure an annual overhaul for all who want it, but this will not be realised until the scheme has been adopted throughout the country. The actual extent of dental caries in different parts of Sweden is unknown, and a survey would have helped the committee to calculate the amount of work likely to be required in each dental area; but the cost of such an investigation was considered prohibitive, and the committee has had to be satisfied with an approximate estimate according to which a dentist employed by the public dental service would devote 1000 hours a year to school dentistry and 1100 hours a year to other dental activities. Some 425 dental districts would be created, staffed by 575 district dentists and 40 assistants. Each district dentist would be aided by at least one dental nurse, who would be entitled to a pension. Provision is also made for the dental care of the insane and mentally defective, for prisoners and the occupants of hospitals and sanatoria. It is calculated that this scheme will cost the State 4,658,000 kronor (£256,500) a year, the local authorities 2,034,500 kronor, and the four principal towns with more or less independent health organisations 408,000 kronor.

CHEMISTRY OF DERMATITIS

IN a paper read last month to the London section of the Society of Chemical Industry,[2] Mr. H. E. Cox, D.Sc., points out that dermatitis is a biochemical problem requiring collaboration for its solution. The question is why does the dermatitis resulting from one of the chemicals in Dr. Cox's list, or from simple salt or sugar, from cement or turpentine, continue for months or years, long after every trace of the causal irritant has been swept away? There are of course answers in plenty, but nearly all of them rest on a basis of theory that is hard to put to the proof. One great exception that escapes mention in his otherwise admirable summary is the experimental work of the late Bruno Bloch, so far the most significant achievement in this difficult field, in that it definitely fixes the site of the reaction we

[1] Bull. mens. de l'off. internat. d'hyg. pub., August, 1936.
[2] Jour. Soc. Chem. Indust., Oct. 5th, 1936.

term dermatitis in the epidermal cell, and thus renders experiments on permeability "to the underside" of the skin as performed by Cox, Francis, Sachs, and others of questionable value. On the other hand certain substances undoubtedly have great powers of penetrating the skin, and it must not be forgotten that the blood and tissue fluids can to some extent "dissolve" volatile oils or other irritant substances and thus cause dermatitis from the "underside." Dr. Cox classifies such noxæ into four main groups: (1) reducing agents, (2) oxidising agents, (3) substances affecting oxidation-reduction processes, and (4) special poisons such as arsenic. This classification has the merit of simplicity and serves both the biochemist and physician. Dyes are thereby relegated to the third group, although, as he remarks, it is impossible to form a clear picture of what happens, and the wide variation of individual susceptibility adds another difficulty. Those interested will be glad to have Dr. Cox's list of textile dyes, 25 in all, that have been experimentally found to cause dermatitis or irritation, and among them will be noted picric acid, malachite-green, and methyl-violet, the first still used by many surgeons as a skin disinfectant and in the treatment of burns, the two last by dermatologists in 1 per cent. aqueous or weak spirit solutions mainly in the treatment of eczematised mycotic infections. Speaking broadly it seems that the more soluble the dye, the more likely it is to cause trouble, especially in the presence of weak acid. Of particular interest and importance is a paragraph on hair dyes, of which it is stated, on the authority of C. Griebel, that no less than 10 million packets are sold annually in Germany alone! Worth remembering too is the assertion that henna dyes are by no means always innocuous, since they are sometimes mixed with "pyrogallol or a diamine." On another page of our present issue Dr. Semon shows that the current practice of shading the eyelids must be added to the list of cosmetic hazards.

THE OUTLOOK IN ADVANCED CANCER

Two recent evenings at the Royal Society of Medicine were given up to consideration of the management of advanced malignant disease. In his presidential address to the section of surgery Prof. Grey Turner recalled a remark he had made in his Murphy oration six years ago that there is a real risk of a generation arising who are ignorant of what surgery can offer in the treatment of cancer. From long experience and mature consideration he was prepared to say that the outstanding feature about the treatment of malignant disease is the not infrequent great success of its local removal. But, he added, it must be the aim of the operator to remove the whole of the affected part together with a wide area of healthy tissue and the path of probable malignant invasion. The surgeon must visualise the extent of the proposed interference and plan the incisions so that the parts are thoroughly exposed under the guidance of the eye. During the whole operation he must keep to the demarcated tissue and not come nearer the growth than was originally planned, and there must be no niggardly dealing with the tissues in proximity to the primary focus. The area of lymphatic invasion to be removed must include not only the lymphatic glands that may be expected to be involved but those in which there is even a possibility of involvement, and this removal must include the soft tissues in which they lie and the intervening lymphatic channels between the primary growth and such glands. Throughout such an operation all manipulations must be deliberate. Good cancer surgery was bound to be time-consuming, and he suggested that operations successfully practised by such men as Halsted and Lawson Tait had never been fully described. It was the full account of an operation and the detailed notes of progress which were needed for real education in surgery, and in the hope of dispelling some prevalent pessimism he went on to give details of cases which he had himself followed for many years—cancer of the rectum alive and well thirty years after operation; endothelioma of the gum removed sixteen years ago, and followed six years later by carcinoma of the rectum which was in turn removed, the patient being now alive and well; with other examples of extensive operations for cancer of the breast, of the colon, and of bone. Even the continued attack on recurrences might be of immense benefit to the patient.

The second occasion was the visit of Prof. Hans Holfelder of Frankfort-on-Main to the section of radiology on Nov. 20th. The mode of action of X rays on cancer cells was, he was satisfied, mainly an effect on the cell nucleus and he made the interesting suggestion that in certain cases damage to the genes might have a lethal effect upon the daughter and grand-daughter cells while leaving the cells actually irradiated apparently unaffected—thus accounting for the cases in which the tumour only begins to disappear some time after irradiation. For the lethal effect on the cancer cell it was the quantity and not the quality of the radiation that was the important factor. The optimum voltage was 180–200 kilovolts, and nothing was to be gained by the use of higher tensions. Fractionation of the dose was all-important, and he did not believe in the superiority of the low-intensity irradiation of the Coutard school. Above all adequate dosage was necessary if the best results were to be obtained, and this meant that skin reactions have frequently to be taken to a stage which looked alarming to the uninitiated. At the same time that technique should be chosen which produced the least possible general effect upon the patient. If this was done benefit could often be obtained even in very advanced growths and even when the disease had become generalised. In Holfelder's clinic only the metastases causing the most serious symptoms or that constitute the gravest threat to the patient's comfort are irradiated and it was, he said, often observed that untreated metastases regressed pari passu with those treated. Specially gratifying were the results obtained with secondary deposits in the bones from carcinoma of the breast, in which cases five-year survivals were not uncommon. In carcinoma of the breast 22 per cent. of the primary inoperable cases survived 5 years and 36 per cent. of the post-operative recurrences were alive after a similar interval. The 5-year survival-rate with post-operative prophylactic irradiation was 53 per cent. He was very satisfied with his results in bone sarcoma, of which only the osteoblastic type was sometimes radioresistant. The osteoclastic sarcomas, whether endosteal or exosteal, gave good results. Even metastases in the lungs from bone sarcoma were not necessarily fatal. On the other hand giant-celled sarcoma was often truly malignant and tended to be radioresistant.

Dr. N. S. Finzi, who followed Prof. Holfelder in the discussion, instanced cases of secondary deposits in the mediastinum following carcinoma of the breast that were well 10 years after radiation treatment. One patient, who originally had bilateral supraclavicular and mediastinal metastases, was alive and

well more than 12 years after treatment. For the treatment of the more sensitive growths such as lymphosarcoma the regional X ray bath had been developed with success at St. Bartholomew's Hospital; many patients with widespread disease had been given thereby additional years of life. Rapidly growing tumours should, he felt, be regarded as radiological emergencies; they were often so sensitive that their response to treatment was almost immediate and a day's delay might make all the difference between metastasis and its avoidance. But even when metastases had occurred palliation might still be obtained by X ray treatment. Prof. Woodburn Morison agreed with Prof. Holfelder that there was probably no quantitative difference in the effects of different qualities of radiation. There was nothing that radium could do that X rays could not.

THE MEDICAL STAMP DUTY INQUIRY

IN 1929 the revenue from the sale of patent medicine stamps was £1,320,780; from that peak it dwindled year by year and by 1935 the revenue had fallen to less than £750,000. In the meantime it is obvious that the sale of such medicines has increased substantially. This is the case for inquiry and the Select Committee of the House of Commons which began to hear evidence on Thursday last week should have little difficulty in touching the spot. When Lord John Cavendish, then Chancellor of the Exchequer, introduced in 1783 the tax on medicine, he estimated that it would yield the "surprising" sum of £15,000, and his estimate was not far wrong. In the first two years of last century the yield was £14,000 and £14,790 respectively, and it is significant that Scotland contributed only £78 and £94 to these sums. From that time onward the revenue began to grown until in 1914 it reached £360,375. The rate of duty was doubled in 1915 and it was not until 1919 that the revenue reached the million mark, after which the demand began to run wild. Then began a search for lawful means of evading the duty. It was discovered in a judicial ruling that medicines the composition of which was declared were not subject to duty if sold by registered chemists and druggists. One after another, the owners of proprietary medicines began to take advantage of this exemption and altered their labels to the extent of indicating upon them the names of the ingredients of the pills and potions. That, however, did not render the goods non-dutiable if they were sold by shopkeepers who were not chemists, and the strange situation arose—and is still with us—under which patent medicines are sold by chemists in packages bearing no stamp and by ordinary shopkeepers in packages bearing a stamp. Strange as this anomaly may appear, it is not in discord with the intentions of the framers of the legislation, for Lord John Cavendish, in introducing it, said, "I shall require all persons who sell medicine and who were not regularly bred to the profession of doctors etc., to take out a licence, and this being done there will be a duty of 8 per cent. laid on the medicines." But Chancellors of the Exchequer do not like to see revenues going down when expenditures are going up.

LIMITATION OF OPIUM PRODUCTION

AT the last meeting of the Assembly of the League of Nations which closed on Oct. 10th, attention was specially directed to the limitation of production of raw opium. It was realised that the alarming development of clandestine manufacture of narcotic drugs, to which illicit traffickers resort, renders the limitation of production of the raw materials increasingly necessary. Allowing a yearly average of 240 tons of raw opium as being required for the legitimate manufacture of drugs, and some 300 tons said to be necessary for making "prepared" opium, the world-requirement for what are deemed legitimate purposes is put at 540 tons a year. On the other hand the world-production of raw opium in 1933 was not less than 1530 tons and in 1934 not less than 1080 tons. Difficulties in the way of such limitation of production have been urged by the fact that whereas the manufacture of drugs from opium is limited to some 60 factories in 15 countries, the cultivation of the opium poppy concerns hundreds of thousands of farmers over an area of 100,000 hectares without including China. The other opium-growing countries are Afghanistan, Bulgaria, Greece, India, Iran, Japan, Korea, Turkey, Soviet Russia, and Yugoslavia. It is however anticipated that agreement may be arrived at with those responsible for drug factories which receive the raw material, as well as with the monopolies dealing with opium for smoking and thus bring about limitation of the market for these permitted purposes. Accordingly the Assembly, at length convinced that the limitation of raw materials constitutes a decisive step in the League's campaign against the abuse of narcotic drugs, is urging all governments to furnish the advisory committee, before Jan. 31st, 1937, with replies to the questionnaire that has been addressed to them. Two preliminary conferences are to be summoned as soon as possible by the advisory committee, one to be composed of representatives of countries producing raw opium for export and the other of representatives of countries exporting prepared opium for smoking and of countries having monopolies for the same.

A report made by the Permanent Central Opium Board indicated that in the year 1935 there was an excess of 2303 kg. of morphine manufactured, 68 kg. excess of heroin, and 269 kg. excess of cocaine. The quantity of morphine produced in 1935 exceeded the amount in 1934 by 4649 kg., that of cocaine in 1935 exceeded the amount produced in 1934 by 538 kg., while there was a decrease of 39 per cent. in the amount of heroin manufactured.

BCG AGAIN

IF the Swedes have in some respects departed from the principles laid down by Calmette with regard to BCG and the route by which it is administered, they have more than made good their digressions from the path of conformity by supplying controlled tests. From a lecture by Prof. Israel Holmgren[1] of Stockholm it appears that expert Swedish opinion is on the whole definitely in favour of BCG vaccination. The most convincing evidence comes from the county of Norrland where Prof. Näslund supervised a large-scale test under the ægis of the Swedish National Association against Tuberculosis. Between 1927 and 1933 the children given BCG numbered 7765. The tuberculosis mortality was about five times higher among the controls than among those receiving the vaccine, and as all concerned were convinced that the conditions under which the children lived were approximately identical for the two groups, a favourable verdict could not be evaded. Prof. Holmgren uses the BCG provided by Dr. Anders Wassén of Gothenburg, and he has found that the abscesses easily provoked by large and superficial injections can be avoided by giving it subcutaneously in small doses and at long intervals. It can also be given with impunity by intramuscular

[1] Hygiea (Stockholm), Oct. 31st, 1936.

or intravenous injection: with an experience of some 200 intravenous injections, Holmgren has seen no more serious reaction to them than a transient rise of temperature; but on the whole he prefers as a routine measure deep subcutaneous injections for adults. The vaccine prepared by Wassén contains 0·5 mg. of bacilli per c.cm., and of this Holmgren gives a minimum of 0·1 mg. and a maximum of 0·5. After describing the high and varied tuberculosis morbidity in the personnel of his hospital of recent years, he concludes that the way to reduce this morbidity is to treat every new member of the staff with B C G if he or she is tuberculin-negative; and he is inclined to extend this benefit also to tuberculin-positive entrants.

ADVENTURES IN MEDICAL RESEARCH

Sir Robert McCarrison, delivering the Lloyd Roberts lecture to the Medical Society of London last week, took as his thesis that we shall only reach the final solution of the causes of human disease by studying its natural occurrence. Having devoted much of his life to medical research in the laboratory as well as among native populations in India, he was certainly not decrying the experimental method; but he told how actual medical practice had faced him with problems to solve, as in a detective story, and how by examining every clue he had led up to the discovery of one disease and contributed much to our knowledge of many others. He first went to India as an army doctor at the age of 23, and eighteen months later, in 1903, found himself stationed at a fort in Chitral. A regular outbreak of fever there at one season of the year had been set down as ague, but this diagnosis he was able to refute by the controlled use of quinine, for the sufferers recovered as quickly without the drug as with it. The fever did not correspond to any in the text-book and he set out therefore to make what deductions he could. It was a "place disease" contracted by troops at the fort, even if only visiting it for a few hours: it did not occur above a certain altitude, it was not contagious, and its appearance, disappearance, and distribution corresponded in a remarkable way with those of the sandfly. He inquired into local knowledge, sent for a microscope, and improvised incubators. Blood culture proved negative, transmission of the disease by nasopharyngeal swabs and blood injections failed, and repeated attempts to make sandflies transmit the fever met with no success. Transference to Gilgit prevented McCarrison from confirming his strong suspicion that the fly transmitted the illness, but this suspicion was proved correct by Doerr in 1906.

In 1903 also he began a survey of goitre. At that time little or nothing was known of its causation and so, as he said, he approached the task without preconceptions. He found that the distribution was geographical, the endemicity varying from village to village and from house to house. Observing that nine villages in a group were affected with goitre according to the degree of pollution of their drinking-water, he was led to try the effect of intestinal disinfectants. The drugs, thymol in particular, did cure early cases. He proceeded to test the goitrogenic quality of the water by arranging that 36 men, including himself, should consume large quantities of suspended matter separated from the water; 10 of the volunteers, including himself, developed goitres, while 31 others living in similar circumstances but taking boiled suspended matter did not develop it. The association of low iodine content of the soil with the occurrence of goitre found commonly in other parts of the world was not invariable in India, and he had tackled this problem by finding out the normal size of the gland in large numbers of animals and then building on this basis a series of large-scale feeding experiments on animals. The outstanding conclusion from these investigations was that there were many factors: polluted water; intestinal infection; fats, fatty acids, and lime in excess—all these had a goitrogenic action. Deficiency of other substances, of vitamins A, C, and probably B, of protein where vitamin A was deficient, of phosphates where there was excess of lime, and deficiency too of iodine had the same effect. There were therefore positive and negative factors in the causation of goitre.

Experiments on beri-beri, begun in 1913 and continued after the war, others on urinary calculus and on gastric ulcer, combined always with clinical observation, enabled McCarrison to show up several causal factors in each condition. Some would envy him his opportunities for observations on a large scale, and hearing the tale when his findings have become common medical knowledge might forget the immense difficulties of breaking fresh ground. Others would hesitate to venture outside a laboratory where they can study one factor at a time; though many problems of field work would then remain unknown. Sir Robert's work has shown how happily the two means can be used by one who has the ability to use them, and how necessary they both are to the advance of knowledge.

A SECOND VOLUME

EARLY in the year a series of articles on treatment in general practice, which had appeared week by week in the *British Medical Journal*, were made accessible to a wider public in a volume which included the management of disorders of the respiratory system, acute infectious fevers, and cardiovascular affections. The second volume[1] now before us follows the same plan, its chapters being grouped under diseases of the nervous system, digestive system, blood and blood-forming organs, rheumatic diseases, metabolic diseases, and diseases of the kidney. Two articles on diagnosis have been included to illustrate points raised in the articles on treatment. The articles are written by well-known clinical teachers in various schools, each of whom was asked to give well-defined guidance to the general practitioner in handling a particular disorder. The two volumes form a useful vade-mecum for the newly qualified as well as for the older practitioner of medicine.

AT a meeting of congregation on Tuesday last Lord Nuffield said he understood that the money he has given to the University of Oxford for medical study and research was insufficient to produce the effect he anticipated. He would therefore increase his donation to £2,000,000; "for I would hate to leave this building with the feeling that that Scheme was not complete."

ON Thursday, Dec. 10th, at 2.30 P.M., Mrs. Meyer Sassoon will open the Mozelle Sassoon high-voltage X ray therapy department at St. Bartholomew's Hospital. Lord Rutherford, F.R.S., and Lord Horder will speak, and a memorial plaque to Dr. Ronald Canti, late clinical pathologist to the hospital, will be unveiled by Dr. Malcolm Donaldson, director of the cancer department. Current at a million volts will be available in the new installation.

[1] Treatment in General Practice: Management of Some Major Disorders. Articles republished from the British Medical Journal. Vol. II. London: H. K. Lewis and Co., Ltd. 1936. Pp. 426. 10s. 6d.

PROGNOSIS

A Series of Signed Articles contributed by invitation

CXXI.—PROGNOSIS IN BREECH PRESENTATION

(*Concluded from p. 1228*)

Prognosis to the Mother

BREECH delivery is for the mother associated with certain risks which, although very real, are scarcely capable of being expressed in terms of statistics. There is greater likelihood of difficulty than in vertex delivery, but it is also true that many cases—even those looked forward to with apprehension—are in the end uneventful, easy labours. Much depends on the relative size of fœtus and pelvis, and, as has already been indicated, it is impossible to gauge this with even reasonable certainty.

Labour in breech delivery usually lasts longer than average time, and on occasion—especially in the primiparous patient—it is greatly prolonged. This fact alone leads to complications. The patient may become physically exhausted at a relatively early stage, and obstetrical injury will follow premature attempts at interference. Equally well the patient may show undue mental exhaustion, and mental trauma may result from withholding the same interference which, from the strictly mechanical point of view, is considered inadvisable. The obstetrician may thus have a difficult task to "manage" the labour in the best interests of both mother and fœtus. Sedatives and analgesics such as opium should be freely given during the early stages; and throughout labour abundant glucose drinks will help to guard against dehydration and liver damage.

THIRD DEGREE TEARS

Of the obstetrical injuries suffered by the mother during breech delivery by far the commonest is a perineal and vaginal tear involving in many cases the sphincter ani, and resulting not infrequently in a complete rupture of the rectum. This most disabling injury is almost always the result of forcing the hand into the vagina in order to pull down extended arms. Since the vagina is already fully distended by the fœtal trunk, it is scarcely possible to carry out this procedure without serious injury to the mother. The preliminary performance of a generous postero-lateral episiotomy will, however, overcome much of the difficulty associated with extended arms, and all danger of rupture of the rectum will be avoided. Apart from complications such as extended arms, it is doubtful if even one in four primiparous patients escapes perineal injury during breech delivery. There is, therefore, good reason for the routine use of episiotomy in such cases. The clean incision can be stitched with far greater accuracy than the irregular tear of a perineal and vaginal rupture, and the end-results of healing are undoubtedly better. When to these reasons is added the benefit which the fœtus derives from the lessened stress of labour, there seems to be an unquestionable case made out for the routine employment of a postero-lateral perineal incision in every primiparous patient in whom the fœtus is not obviously less than normal size.

POSTPARTUM HÆMORRHAGE

Hæmorrhage after birth of the fœtus is not uncommon in breech delivery, and is the result partly of the prolonged labour with consequent uterine exhaustion, partly of the frequency with which deep anæsthesia is administered and continued even into the third stage, and partly of the presence of cervical, vaginal, and perineal tears. All means of checking hæmorrhage should be at hand, and injection of pituitary extract or of Ergometrine at once resorted to if there are signs of uterine atony. Direct injection into the uterine muscle through the abdominal wall is a particularly effective method of administering these drugs. Hæmorrhage from a perineal rupture is best treated by immediate suture of the torn vagina and perineum.

Prognosis in Prophylactic External Cephalic Version

Since breech delivery carries with it a grave risk of death to the fœtus, it is obvious that prophylactic external cephalic version is a desirable operation. The version should be performed after the thirty-fourth week of pregnancy; before that time it is scarcely necessary because the fœtus varies its position so often. After the thirty-sixth week the operation is increasingly difficult to carry out, although always worth attempting. It is sometimes said that if the fœtus has extended legs (frank breech), external version is impossible. This is not so, although the operation is certainly more difficult to perform than in the case of the full breech.

Many criticisms have been made of prophylactic external cephalic version based on the supposed dangers of the manipulation. These dangers have been dealt with by Norman White and J. D. S. Flew, who in 1933 reported to the obstetric section of the British Medical Association meeting in Dublin the results of 293 cases treated in the obstetric unit of University College Hospital. In a private communication the authors have kindly supplied me afresh with the figures submitted to that meeting.

Of patients after the thirty-second week of gestation, and including cases dealt with under anæsthesia, version was successful in 76 per cent. of the cases in the primiparous group, and in 94 per cent. in the multiparous group. The risk of premature labour being induced by attempts at version was found to be negligible when the operation was performed without an anæsthetic. With anæsthesia, premature labour occurred in 8 out of 40 cases. All these patients had already advanced to at least the thirty-seventh week of pregnancy. Amongst 201 versions performed without anæsthesia there was no instance of hæmorrhage occurring as the result of the manipulation; when the manipulations were performed under anæsthesia bleeding was provoked in 6 of 92 patients. The bleeding was never severe from the mother's point of view, but the associated placental separation was apparently responsible for fœtal death on two occasions.

These statistics are of great help in determining the merits of this simple operation. It would appear that there is always a slight risk of placental separation, but except in the very rare circumstance of the patient having an unsuspected placenta prævia, the danger is negligible provided that the manipulations are carried out with gentleness and care. Anæsthesia should be resorted to with reluctance, and only in cases in which the patient's nervousness and apprehension prevent muscular relaxation. It should not be used in order that a degree of force can be exerted which the unanæsthetised woman could not tolerate. If anæsthesia is used at all, ether or chloroform is required: neither evipan nor nitrous oxide give the necessary relaxation.

Finally, the occasional inability to perform version is not a confession of incompetence, for in a minority of cases the fœtus with its breech impacted in the maternal pelvis will resist all attempts at dislodgment. Having regard to the possible dangers, it can still be said that the benefits of this operation are so great that it should certainly be attempted as a routine in every patient in whom an abnormal fœtal position is discovered after the thirty-fourth week of pregnancy. By its use much maternal distress and fœtal mortality can be avoided.

Conclusion

The seriousness of breech delivery has been underestimated. It is not generally realised that the risk of death to a full-sized fœtus in a primiparous woman is higher than the risk associated with even the most major of the standard surgical operations. The fœtus faces a risk of death greater than does, for example, the patient who is to have a pituitary tumour removed. Because of this grave outlook, prophylactic external cephalic version should be performed whenever possible. The patient of forty or over who is pregnant for the first time, and in whom gentle attempts at version have failed, should be given the option of having her child delivered by Cæsarean section.

Lest the dangers and difficulties of breech delivery have been over-stressed, it must be stated that parturition is in many cases—even in the majority—an easy event requiring little or no help from the obstetrician. Perhaps for this reason the undergraduate student too often neglects the subject in the practical midwifery course, and prefers to spend time in learning details of the technique of forceps delivery. In my experience at least twice the time is required to teach the undergraduate student the elementary principles of breech delivery as is required to teach him the essentials of the forceps operation. Instruction and practice on the mannikin should be an important part of the training in undergraduate schools. For this purpose Prof. Dougal's porcelain model is excellent, for it permits of the use of a preserved fœtus—a far superior object for teaching purposes than the time-honoured stuffed doll.

Breech delivery can never carry with it a prognosis equivalent to that of normal labour. All too often it brings to the expectant mother a disappointment of cherished hopes, and to the medical attendant a humiliating experience. By implication the obstetrical training of our medical schools must often be held in reproach. Yet many of the dangers inherent in breech delivery may be lessened by simple means, and some of them may be entirely avoided. One thing is certain: statistics relative to breech delivery show beyond doubt that this obstetrical abnormality is in general regarded too lightly, and too often those methods of treatment are neglected by which the relatively grave prognosis for mother and child can be substantially improved.

CHASSAR MOIR, M.D., F.R.C.S. Edin., F.C.O.G.,
Reader in Obstetrics and Gynæcology, British Postgraduate Medical School, University of London; Assistant Obstetrician and Gynæcologist, Hammersmith and Fulham Hospitals.

SPECIAL ARTICLES

MEDICAL LIBRARIES*

BY SIR HUMPHRY ROLLESTON, Bt., G.C.V.O., F.R.C.P.
EMERITUS REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE

LIBRARIES and museums are important instruments in medical education and progress. They resemble each other as reservoirs of sound learning gathered from practical experience. This correlation of knowledge, shown by the oldest scientific museum in Great Britain—the Ashmolean Museum (1679) at Oxford—which was under the same roof as the library of natural history and philosophy, and also by the original British Museum (1754) in Bloomsbury, the natural history part of the museum being moved to South Kensington and opened in 1881, was confirmed, as regards medicine, by the Army Medical Museum which contains the Army Medical Library.†

Another resemblance is that verbal descriptions and illustrations in books and atlases reproduce specimens on the shelves of museums; and conversely complete accounts of such morbid specimens, the latter being "the original documents" (Keith), should include the clinical details.

The earliest repositories of records—the representatives of books—were either in temples because in all civilisations the priesthood has been par excellence the learned class, or in palaces, because rulers often patronised literature and art. Chambers for the storage of records in the form of inscribed tablets and cylinders of baked clay were discovered by Sir Henry Layard in 1850 in the Assyrian palaces of the Kings Sennacherib, Esarhaddon, and Ashur-banipal, going back to 700 B.C. The subsequent history of libraries in ancient Greece, Alexandria, Pergamos, and Rome has been discussed by J. W. Clark.

Museums, especially medical museums, were a more modern development. It is true that the first recorded institution to bear the name of "museum" (temple or haunt of the muses) was that founded at Alexandria about 300 B.C. by Ptolemy Soter (367–283 B.C.); but this did not conform to the modern meaning of the word, for it was an academy or meeting place for learned men (Flower). John Hunter's great collection in the eighteenth century exerted a powerful influence, as shown by the activities in the last century of Sir Astley Cooper (1768–1841) of Guy's Hospital, Sir Benjamin Brodie (1783–1862) of St. George's Hospital in London, by Sir Henry Acland (1815–1900), who from 1845 taught the preliminary medical sciences with the help of a museum at Oxford, and by Sir George Humphry (1820–96), who adopted the same method in Cambridge. The relative importance attached to medical libraries and museums has varied to some extent from time to time, no doubt as a result of the enthusiasm of prominent authorities. Physicians have usually turned more to libraries, and surgeons done more for museums, but this is far from being a rigid rule. Rarely has the same man whole-heartedly and equally promoted them both; such, however, were the physicians Sir Hans Sloane (1660–1753), president of the Royal Society and of the Royal College of Physicians of London, whose collections of natural history, articles of virtu (69,352),

* Extracts from an oration delivered in Washington, D.C., on Nov. 16th at a celebration of the centennial of the Army Medical Library. The latter part, not reproduced here, contained biographical sketches of the librarians J. S. Billings, Robert Fletcher, and Fielding Garrison.

† It may be interesting to note that by his will (1695) Anthony Wood left all his manuscripts and books to the Ashmolean Museum rather than to the Bodleian Library (founded 1598) of which he had been given the free run; was this evidence of ingratitude and in conformity with his difficult temperament, or of an unsuspected broad-mindedness?

books (50,000), and valuable manuscripts formed the nucleus of the British Museum, and Sir William Osler (1849–1919) whose generosity to many libraries, especially to his alma mater, Montreal, and his advocacy of medical museums is known to all.

About the middle of the last century the formation of museums was more keenly carried out than that of libraries, and may have represented a healthy opposition to mere traditional authority, and have been inspired by a preference for an appeal to the visible evidence or in obedience to John Hunter's admonition to Edward Jenner "Don't think, try." This advice is equally, if not even more, applicable now that functional disorder in medicine has taken a part, formerly almost monopolised by morbid structural change. The use of the experimental method in the elucidation of disease has tended to transfer the illustrations of disease from the pathological museum to the laboratory.

Medical libraries a century ago were generally those of individual medical men and, as in the case of the famous libraries of Richard Mead (1673–1754), and Anthony Askew (1722–74) in the previous century, were often sold and dispersed after the death of their owners. Those of institutions left much to be desired, as John Shaw Billings found to his discomfiture in 1860 in the United States. In the 'seventies of the last century when the Surgeon-General's library was coming to its second birth and rapid growth, the idea of medical libraries was stirring in North America, and in some instances, such as at Boston, quickened after a somewhat remote conception, and very probably by the activities of Billings.

I need not attempt to preach to the converted on the value and inspiring virtue of medical libraries, for this has been so conclusively set forth by Billings, by Oliver Wendell Holmes (1809–94) at the first opening of the Boston Medical Library in 1878, by Osler in "Books and Men," also at the Boston Medical Library when a new building was opened in 1901, and in 1926 at Cleveland in the charming address "The Doctor and his Books" by Harvey Cushing, Osler's pupil and Boswell, who could so convincingly have shown here and now how that tradition survives.

The Army Medical Library

The layman might be puzzled to explain why and how it came about that the surgeon-general of an army, however great, should have such a library as this attached to his office which is devoted more to active organisation and orders than to medical bibliography ancient and modern. The answer, clear to everyone here, is the personality of John Shaw Billings of the Surgeon-General's Office and the creator of its library. Originally a small collection of reference books for the use of the Surgeon-General (Joseph Lovell) in his office at Washington (according to Billings some time before 1836) it long remained in a state of suspended animation. In 1840 a manuscript catalogue listed 135 works (228 volumes); at the outbreak of the Civil War (1861) the number of volumes was between three and four hundred; on May 10th, 1864, seven and a half months before Billings came on the scene as the first person to be in any way—for he was only nominally not officially—responsible for the books, a printed catalogue showed a total of 1365 volumes; in another printed catalogue dated Oct. 23rd, 1865, the number had risen to 2258. Growth then became rapid; in 1868 the sum of eighty thousand dollars left over from the funds of Civil War hospitals was made available for the library, Billings being given discretionary powers; and on June 12th of that year a printed catalogue referred to 6066 volumes, showing that Billings had not lost any time in building up the library; in 1871 a catalogue, published in 1872, ran to 454 pages and showed that the number (13,380) had doubled. In 1873 a printed catalogue of 2468 pages in 3 volumes—the first two arranged under the heading of authors only, and the third containing anonymous works, transactions, reports, and periodicals, came out under Billings's direction. The library then contained 25,000 volumes and 15,000 separate pamphlets. It may be safely assumed that Billings was now steering straight towards the great conception ultimately achieved by the Surgeon-General's library and its Index-Catalogue. In 1876 the library contained forty thousand volumes and as many pamphlets, and in 1895, when he retired, the number had increased to 308,445.

Besides books, pamphlets, the valuable collections of 450 out of the estimated 600 medical incunabula (books printed before 1500), and of Paris theses unrivalled even in their native city, the library has five thousand portraits of medical men, and a collection of medical autographs to which Abraham Jacobi and Garrison made generous contributions. The Army Medical Library stimulated beneficial imitation, which charitably began at home, for in 1929 there were 200 medical libraries in the United States as compared with 118 in Europe.

From 1865 to 1887 the Army Medical Museum, not a fire-proof building which contained the library, occupied the old Ford's theatre in which Abraham Lincoln had been assassinated on April 14th, 1865. This soon became quite inadequate, and Billings, rising to the occasion, obtained funds, Congress appropriating 200,000 dollars, for the construction, according to his plans, of the present home of the Army Medical Museum, of which he was also curator, and of the library at the corner of Seventh Street and B-street (now Independence-avenue), S.W. This was successfully carried through in time to receive in 1887 the ninth International Medical Congress held at Washington.

History repeats itself, and the Army Medical Museum (up till 1922 always called the Library of the Surgeon-General's Office) has now, as happens sooner or later to active libraries, been faced for some time with the impossibility of further expansion on its present site which indeed is now wanted for the further development of Washington (Reynolds). What better way of celebrating the commencement of the second century of the library could there be than the erection of a new building so urgently needed and so thoroughly deserved?

The Index-Catalogue

A library is obviously an essential factor in the preservation of knowledge and history. It has, however, been rather pessimistically said that a library is a mausoleum where knowledge lies dead and mummified; this may be a real danger unless it is activated and kept alive by a guide to its contents. A library is not complete without a good catalogue—namely, one with the double entry of author and subject; and it is obvious that the larger the library the more fully will such a catalogue afford access to existing knowledge, especially when printed and distributed widely to other libraries. The Army Medical Library is the largest of its kind, and more current periodicals are devoted to medicine than to

any other branch of science. As long ago as 1887 the library of the Surgeon-General's office obtained annually 700 published medical periodicals exclusive of those devoted to pharmacy and to dentistry. Since then they have become much more numerous; at the end of 1912 the total number of current periodicals were estimated at 1654; the library received 1895 annually in 1916, the number fell to 1240 in 1920, but rose to 1925 in 1927, and now is about 2000. Medical journals vary in their span of life; some are ephemeral, and there appears to have been a considerable mortality during the world war. Their fluctuating population is compatible with Bulloch's estimate that of the 23,000 items in the "World List of Scientific Periodicals," covering the years 1900–31, 5000 were medical. The bibliographical scope of the Index-Catalogue is therefore phenomenal, and widespread appreciation of its help is graphically shown by the worn state of the original bindings, or by new bindings, of its volumes in the medical libraries of Europe.

How does the Index-Catalogue compare with previous medical bibliographies which Osler prescribed as the best "float through posterity" for the authors? Conrad Gesner (1516–65), "the father of bibliography," supplied what was in some respects the model for the "Bibliotheca Osleriana" (1929), hailed by Prof. John Fulton "as the greatest achievement of the humanistic movement in medical bibliography." Albrecht von Haller (1708–76), the greatest medical bibliographer of the eighteenth century, dealt with botany, anatomy, physiology, surgery, and medicine. W. C. Ploucquet (1744–1814) of Tübingen attempted to provide a complete catalogue of medical literature in his "Initia Bibliothecæ medico practicæ et Chirurgicæ realis" (1793–97). Robert Watt (1774–1819), of Glasgow, published in 1812 for the guidance of his students at the Royal Infirmary, "a Catalogue of Medical Books." This led to his ambitious and posthumous "Bibliotheca Britannica, or a General Index to British and Foreign Literature" in four volumes in 1824, covering law and other subjects in addition to medicine, thus reverting to the status of the scholar-physicians in the sixteenth century when medicine and the natural sciences formed part of the equipment of learned men. The labour thus entailed is said to have been responsible for the death of Watt and later of two of his sons. Thomas Young (1773–1829), physicist, Egyptologist, and physician, the most comprehensive genius and man of science who ever entered the medical profession, brought out in 1813 "An Introduction to Medical Literature, including a System of Practical Nocology." A. C. P. Callisen (1787–1866), a Danish surgeon, in the 33 volumes of his "Medicinisches Schriftsteller-Lexicon" (1830–45) dealt exhaustively with medical publications from the middle of the eighteenth until the end of the first quarter of the nineteenth century. A comic relief to these many-volumed works might be supplied by the "Medical Bibliography" (1834) of James Atkinson (1759–1839) of York who gave up the task after the letter B; and it has been shrewdly suspected that he never had any intention of carrying it further. It abounds in witticisms after the manner of Sterne's "Tristram Shandy," and has earned for him the title of "a disciple of Rabelais" and as well qualified for residence in the Abbey of Thélème.

Without in any way detracting from the services of these bibliographical fathers it is obvious that the life of a Government department or public institution is potentially perpetual and not limited by the relatively short span of an individual life. Other medical bibliographers were described by Osler as lilliputian as compared with the gargantuan character of the Index-Catalogue.

Among bibliographies that of medicine now takes a very high if not the highest place. As largely responsible for bringing this about the "Index-Catalogue of the Library of the Surgeon-General's Office"—which is beyond any comparison the most exhaustive medical bibliography ever undertaken—and the "Index Medicus" have made the whole medical world, especially English-speaking readers, hopelessly insolvent debtors.

The history of the Index-Catalogue began in Billings's brain from his experience in 1860 when the need for such a bibliography was painfully forced on his notice, and it is probable that he began to form plans after being given in 1868 a practically free hand with the fund of eighty thousand dollars; the catalogues published in 1872 and 1873 led up to the definite proposals in 1876 contained in his "Specimen Fasciculus of the National Medical Library, under the Direction of the Surgeon-General, United States Army." This was submitted widely to universities, libraries and medical men for criticism and suggestions. It was arranged under both authors and subjects, and so far-seeing that its style and arrangement were practically those subsequently adopted in the Index-Catalogue. It was warmly welcomed in his dedicatory address at the opening of the Boston Medical Library in 1878 by Oliver Wendell Holmes, who correctly prophesied that a liberal appropriation by Congress to carry out such a work for this advancement of sound knowledge and the improvement of human conditions would greatly redound to the honour of the nation.

THREE COMPLETE SERIES

The first series of the Index-Catalogue began in 1880 when Congress, then urged by Abraham Jacobi (1830–1919) made the first appropriation for this purpose, and its sixteen volumes came out yearly, closing in 1895; it indexed 85,663 author titles, 151,504 pamphlets, of subject titles 168,587 books and 511,112 journal titles. It was edited by Billings, who in the last volume spoke of it as "a labor of love," with the coöperation of Fletcher, who supervised the proof-reading and devised the abbreviations of the periodicals. As criticisms of an adverse character of the Index-Catalogue have been extremely rare, reference may be made to what Billings said in 1891, when the first twelve volumes of the first series had been published—namely, that the chief serious errors were those of omission, and that of these about fifty had so far been detected. In the final volume Billings gave a list of the errors, and remarked that "there are few medical writers now living who have not sent to the library at least one pamphlet." In the last volume of the second series (1916) the librarian, Lieut.-Col. C. C. McCulloch, jun., repeated this statement with a wider application—to all members of the profession—namely, that "few physicians have not donated some book, pamphlet, or reprint of their own composition."

The second series consisted of 21 volumes which were issued between 1896 and 1916, and were edited by Fletcher until his death in 1912. It was then completed by Garrison and Allemann.

The third series (1918–32) consisted of ten volumes and indexed medical literature up to the end of 1925, under the direction of Albert Allemann, who was principal assistant librarian from 1922 to 1932.

THE FOURTH SERIES

At one time it was arranged that the Index-Catalogue should come to an end with the third series. This would have been a bibliographical catastrophe of the first magnitude and have required some corresponding substitute, such as a clearing-house of knowledge under the League of Nations. But fortunately in the following year anxiety was relieved by Surgeon-General M. W. Ireland who, after receiving and considering opinions from various sources, announced that another series would at once be undertaken. In the recently issued first volume of this fourth series some changes have been made: the abbreviations have been shortened; in the references the volume numbers are in arabic instead of roman type, the arabic numbers being printed in bold-face type, and the use of eponymous titles in the nomenclature of diseases is avoided as far as possible, an example which it is hoped will be widely followed. An important factor in the success of the Index-Catalogue has been the way in which the difficult task of separating the chaff from the wheat has been carried out. The decision of what articles should be included has probably presented less difficulty from that of exclusion, for a paper manifestly unorthodox and badly expressed may yet contain an idea or observation destined to be most important.

The Index Medicus

This famous and invaluable monthly bibliography of the world's medical publications, though long a close companion and immediate supplement of the Index-Catalogue, was never an official government periodical, and therefore depended for financial support on its sales, thus causing its devoted editor, Fletcher, much business worry. In Garrison's words (1913) "the work of copying out the library cards for redaction was parcelled out, as the celebrated Haller did with his eighteenth century bibliographies of medicine, among the wives and daughters of the library force as private work." It became a sort of annual Index-Catalogue in miniature and, like the larger work, had a double entry of subject and author. Starting in January, 1879, a year before the first volume of the Index-Catalogue appeared, it came out monthly until May, 1899, when it sank in financial deep water; for, in spite of the help it gave medical writers, its subscription list was never large, much less sufficient to meet the expenses of publication. Many of us, it must be feared, regarded the Index Medicus and the Index-Catalogue as natural blessings, like fresh air and sunshine, and did not realise that gratitude should take a more practical form than passive expectation of their continuance. Three more volumes (1900–02) were brought out under the title "Bibliographia Medica (Index Medicus)" in Paris with the support of C. Potain (1825–1901), G. Debove (1845–1920), Charles Richet (1850–1935) with Marcel Baudouin (1860–) as editor-in-chief. In 1903 the Index Medicus was given a fresh lease of life by the wise generosity of the Carnegie Institute of Washington, which had been incorporated in 1902 with Billings as vice-chairman of the board of trustees. The Index Medicus continued until 1927 when it was amalgamated with "The Quarterly Cumulative Index to current Medical Literature," published since 1916 by the American Medical Association, under the title of "The Quarterly Cumulative Index Medicus," the Carnegie Institute and the American Medical Association both giving their support. Billings and Fletcher edited the twenty-one volumes of the first series (1879–99), and Fletcher, who had previously been mainly responsible for the editorial arrangements, was editor-in-chief for the nine years 1903–12, with the active help of Garrison, who completed the second series (1903–20) without any co-editor. The third series (1920–26) was edited by Garrison and Albert Allemann who both joined, as associate editors, the board of the Quarterly Cumulative Index Medicus, Garrison resigning in June, 1929, a year before he was retired from the active list of the army.

Librarians

Like many other lovers of literature, whole-time librarians usually lead secluded lives outside the ambit of the limelight. The ideal librarian is a saintly, self-denying character with a keen interest not only in books but in their would-be readers, whose time he saves thereby helping them, rather than himself, into print and prominence. He thus obeys the precepts and follows the example of Henry Bradshaw (1831–86), librarian of the University of Cambridge, England, from 1867 to 1886; this particular office, it may be mentioned, was for three centuries (1278–1577) held by the University chaplain, an arrangement possibly appropriate as combining the care of the soul with that of the mind. Librarians in medical libraries often play a ghostly part in the contruction of books and papers. The number of medical men who have been whole-time librarians of medical libraries is small; but in the United States what may have been lacking in quantity has been more than made good by quality. To three bibliographer-librarians of the Army Medical Library tribute is most justly due—Billings, Fletcher, and Garrison; for, like the history of the world, that of this great library is the biography of its great men.

PUBLIC HEALTH CONGRESS

AT a session of this Congress held on Nov. 20th the chair was taken by Sir LAWRENCE BROCK, and a paper on the organisation of

Recreations and Amusements in Mental Hospitals

was read by Dr. R. EAGER. He described how he had visited Dutch hospitals and introduced a similar occupational system into the Devon Mental Hospital with the result that 75 per cent. of the patients became systematically employed. Idle hands would always find mischief, and the organisation of interests in non-occupational therapy hours needed attention. The occupation should not be called work, must be free from monotony, and be a complete change if it were to constitute a recreation. Physical drill classes had proved most successful, and there was no need to seek an instructor outside the nursing staff. The class must be kept small; the activities could be those of ordinary Swedish drill, and deep-breathing exercises were good. Organised games had been used successfully in some mental hospitals; elevens and fifteens must, however, be composed of patients and not largely of staff. Dances were popular in the winter; it had long been the custom to urge patients to join in. Walking parties resembling flocks of sheep were strongly to be deprecated; parole partly took their place, but apathetic and introspective patients should be taken in small parties for country walks.

In the provision of amusements, also, every effort must be made to get patients to coöperate. Often recreation halls were too small. Inter-ward parties and competitions might be organised. Wireless and the cinema were essential in every hospital, but must be controlled. Occasional escapes from reality into the film world were good for everyone, but must not become a habit nor a refuge. Films which reacted on the emotions should be excluded; many patients were profoundly affected by what they saw on the screen. Staff concerts were very popular and did much to take the patients out of themselves. Theatre managers were always sympathetic to hospitals, and would no doubt extend this attitude to mental hospitals if approached in the right way. Recreational therapy called for extensive organisation and coöperation and real enthusiasm. More individual treatment and less herd treatment was the stepping-stone to further advancement in the treatment of mental disorder.

PHYSICAL FITNESS THROUGH EXERCISE

Dr. R. STRÖM-OLSEN said that exercise should form an integral part of an organised system of occupational therapy in every modern mental hospital. It exerted its influence both on the physical and on the mental health. Exercises of effort, such as weight-lifting and sprinting, developed the qualities of concentration, alertness, neuromuscular coördination, and economy of energy. Exercises of endurance, like walking, running, and rowing, had a greater effect on circulation and respiration and on the capacity to deal with fatigue products, and in the long run produced more constitutional vigour and physical robustness. Every mental hospital should possess a gymnasium, especially for winter use when outdoor exercise was impossible. The most essential requirements were parallel bars, trapeze bar, flying rings, vaulting box and springboard, ropes, high jump outfit, Indian clubs, dumb-bells, skipping ropes, medicine balls, and padded mats. Basket ball had the advantage, among games, of being playable indoors. Patients for physical drill classes should be carefully selected and graded. Extreme emotional depression was aggravated by forcing patients to join a class, and the attention was too defective in maniacal excitement. Much could be done for dementia præcox cases by diverting energy from the phantasy life. Three grades were convenient: "A" grade consisted of newly admitted psychoneurotics, mild psychotics, and convalescents; "B" grade of chronic patients, perhaps demented, but with enough interest and coöperation; and "C" grade of excited, difficult, and repressed patients. Promotion from one class to another accompanied improvement. C grade could do simple drill, marching exercises, and medicine ball in the open air or entertainment hall. Music was a great help, and the exercises must be varied. It was useful to have a nurse or two to help the instructor. The results of tact and perseverance were surprising and gratifying. Suitable patients in the higher groups should be allowed to take the instructor's part at certain times. Folk dancing was often successful.

Every scheme should allow adequate proportion of exercises of effort and of endurance; the optimum ratio was discovered by experience. Mental results varied according to the case, but were usually quite definite. Stubborn negativism could often be overcome more readily by rhythmic exercise than by any other means. Restless over-active cases might be benefited by an hour's informal exercise or play, followed by an hour's walk in the evening, engendering natural sleep and minimising the need for sedatives. In a few months the saving on narcotic drugs among 60 female patients had been £15 and no hypnotics had been given at all. Many dementia præcox patients could be brought into contact with their surroundings by music, rhythm, and the urge to imitation, especially in group drill and ball throwing. Once the vicious circle of negativism and self-absorption had been broken, the time was ripe for the occupational therapy class. Exercise was a useful adjuvant for the benign and recoverable case, but must be subordinated to individual needs. It was applicable to all neuroses except perhaps severe anxiety with panic.

DISCUSSION

Dr. H. DOVE CORMAC (Parkside) spoke of the value of special costumes: bright-coloured skirts and shorts. Two-thirds of the patients were over 45 years of age, and the use of strenuous games was therefore limited. Nor were they of the social class accustomed to playing tennis and badminton. One benefit of regular games and exercise was that the number of breakages had greatly decreased. At Parkside they were not ashamed to show their refractory wards to visitors.

Dr. J. MACARTHUR (Bracebridge) pointed out that "recreation" and "amusement" were defined as "an agreeable occupation" and "a pleasant diversion." Patients in mental hospitals had more leisure for playing games than they had ever had in their lives before, and many of them did not know how to play any game. For physical drill, cases should be very carefully selected by the medical officer, and music and proper kit were essential. A band was one of the most important features in a mental hospital. A cricket team from each ward, playing an American tournament throughout the summer, awakened interest. Five-a-side football matches, seven minutes each way, were useful. Dancing instruction in the wards encouraged nervous patients to take part in the weekly dances. Any entertainment by children was popular. Ward parties had always been a specialty at Bracebridge. Champions at all kinds of games were selected from each ward and competed with each other, the winner getting a prize from the chairman at the Christmas party. Patients wanted a refuge from the wireless. A small ciné camera to make and show pictures of local events was very successful. A supply of periodicals was very important, and local papers and Sunday papers should not be forgotten. A great event was the Old English Fair, with plenty of noise and infinite variety of side-shows, tests of skill, and gambling devices.

Dr. A. C. HANCOCK (Maidstone) said that Barming was the third oldest mental hospital in England but, apart from that handicap, had very fine traditions which helped to create a good atmosphere. His committee were very keen, and let him get on with his work without worrying him. If the coöperation and interest of the nursing staff were obtained, the job was done. It was part of the training of nurses to go thoroughly through the occupational therapy department. The result of putting a football or string-cricket ball in the ward gardens had been marvellous; fears of broken windows and flower beds had not proved justified. In bowls and darts the patients' teams held their own in competitions.

Dr. J. I. RUSSELL (North Riding) stressed the fact that the value of physical exercise was not limited to improved physical fitness. Games improved coöperation with others and should lead patients to think

well of themselves. The spirit created in the hospital benefited every patient and the staff as well. Many patients would not make use of equipment provided for them, but would soon become keen if the nursing staff joined in. However willing the staff might be, they must have time for the work; the proportion of nurses to patients must be increased. The daily segregation of large numbers of patients in fenced enclosures was humiliating and inconsistent with the principles of therapy. The evil of the airing court must be abolished. Playing fields were generally too small; ten acres should be the aim. It should be possible for bowls, croquet, and tennis to be played at the same time as cricket. Male members of the staff playing games should be considered to be on duty so as to be covered against injury. Holiday camps were helpful features.

Dr. P. K. McCowan (Cardiff) pointed out that man was a social being, and recreational therapy tried to reach the patient through his social interests. Recreation had been used for many years, but the modern idea involved systematic investigation into the reactions of the patients. It was a process of readjustment, re-education, and resocialisation. Drill, dances, and games were but the instruments, and the individuals who used them would decide the results, rather than the instruments themselves. For success there must be genuine enthusiasm.

The Chairman stressed the importance of the difference between providing facilities and organising.

Dr. D. Reid (Hellingly) suggested that the life of the mental hospital had been very dull and uninspiring in the past. If the patient's environment was "dull, idle, apathetic, and indifferent," his mental state could not be expected to be otherwise. In winter there should be a minimum of four entertainments a week. Club nights had proved successful; the sexes mingled informally and could smoke and play games. Whist drives were valuable. In the summer there should be three or four games available every day, and evening amusements for those who disliked early bed. The results of this therapy were general happiness, avoiding of dementia, and immense reduction of sedative drugs.

Alderman Lock (Newcastle) urged the importance of allowing laymen to coöperate in these discussions; and asked if there had been an improvement in the recovery-rate as a result of this therapy. Committees wanted to know what they were getting in return for the money.

Holidays for Mental Hospital Patients

At another meeting, when Sir Laurence Brock took the chair, Mr. E. W. Cemlyn Jones read a paper on the extension of holiday provision for working patients in mental hospitals. He recalled the recent improvements in the lot of mental hospital patients as regards food, clothing, recreation, and occupation, but regretted that in most public mental hospitals there was no provision for holidays. Four years ago the Central Association for Mental Welfare had begun to provide holiday facilities for patients in mental deficiency institutions. The association now had three holiday homes, at Bognor, Seaford, and Rhyl, and this year 1050 patients had had short holidays by the sea. A fourth home, at Redcar, would be opened next spring. They had now started taking working patients from mental hospitals with the happiest results. Chronic patients, of reasonably good behaviour, who had no homes to which they could go, had been received. The cost varied from 20*s*. to 25*s*. a week, and Mr. Cemlyn Jones discussed means by which this charge could be met.

Dr. Davies-Jones cordially supported the provision of these holidays, and thought they might be profitably extended to voluntary patients as well.

Place of Epileptics in the Community

Dr. Tylor Fox, in a paper on the need for community care of epileptics, pointed out that research into epilepsy, as well as its treatment, had concerned itself more with the occurrence of fits than with mental conditions associated with the disease, and that the social handicap from which so many epileptics suffered had received little attention. The care of epileptics in the community was nobody's business. Out-patient treatment of the chronic epileptic was unsatisfactory and incomplete. Often little notice was taken of the patient's mental condition, and still less of his status in his home or the community. If the hospital physician could work in coöperation with a social worker who had interviewed the patient and his relatives in the home, he would be able to give advice of value. He could then treat the epileptic as well as the epilepsy. The Central Association for Mental Welfare, Dr. Fox said, had recently carried out a most useful inquiry concerning epileptics in a part of Essex. They had found epileptics living in their homes in a proportion of nearly 1 per 1000 of the population, and admittedly this number was far too low. They had classified the epileptics into those who were mentally defective, those who were emotionally unstable or difficult, and the mentally normal. Personal visits had impressed the investigators with the gravity of the problems that arose in the home. Some of the problems could be dealt with by common-sense advice. Thus the attitude to risks arising from fits varied from excessive caution to frank neglect. Some epileptics were kept in bed or indoors all the time; others were allowed to ride about on bicycles. The problem of unemployment was widespread and less easy to deal with. The whole question could be regarded as one of mental ill health. Continued unemployment, resentment, and anxiety increased the fits, and increase of fits caused further mental deterioration. A vicious circle was set up with destruction of personality as the end. Anxiety with regard to fits, distress at their occurrence, and the burden of a useless and often difficult patient inevitably led to mental strain for other members of the household. It was often hard work for a household with an epileptic in it to be a happy household.

Dr. R. H. Crowley pressed for effective after-care for epileptic children leaving school. Some form of supervision should be given to epileptics living at home, and this the C.A.M.W. hoped to provide through local voluntary associations. Possible openings in employment should be carefully explored. For many, home trades would be the best, and here the Council for the Provision of Occupational Industries among the Physically Handicapped could be of great service in providing simple training. With the coöperation of the Home Office it would be possible to find home industries for many epilpetics. The C.A.M.W. had been impressed with the need, and were going to follow up their work in Essex, and to check the information obtained there by a further investigation in another area. The idea that epileptics should receive community care was a new one, but if carried out by voluntary agencies acting within the framework of the State, much might be done.

Mr. L. W. Greenhalgh deplored the fact that so many epileptics were in public assistance institutions. But colonies were few, and often badly placed

geographically. He stressed the need for the after-care of epileptics leaving residential schools.

Dr. S. E. GILL believed that the incidence of epilepsy would be found to vary greatly in different districts. He had found that selected cases of epilepsy did extremely well when placed out under guardianship.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

ANNUAL MEETING OF FELLOWS AND MEMBERS

THE statutory meeting of fellows and members of the Royal College of Surgeons of England was held at the College on Nov. 19th, the quorum of thirty being reached just as the clock struck 4 P.M. Sir CUTHBERT WALLACE began by welcoming those present to their old College, and then turned to consider salient matters in the report of the council for the year ended July 31st. The fellowship of the College, he remarked, increased year by year in prestige and appreciation. The primary examination held at Calcutta in 1935 was to be followed next year by a series of overseas examinations in Australia, New Zealand, India, and Egypt. He recalled the remarkable response to his appeal for new specimens to meet the needs of the museum which was visited last year by more than 10,000 people. The Groves bequest was keeping up the world-wide reputation of the College for anthropology. Mr. R. R. James's transcript of the apprentice books of Barber-Surgeons was now complete. He alluded again to the solution by the Bernhard Baron trustees of the provision for research work at Lincoln's Inn where the new laboratories would enhance the character of the work done. During the rebuilding the research farm at Downe and offers of bench space elsewhere were tiding over the difficulty of space for research work. He mentioned the award of Leverhulme research scholarships, and asked for more money for the purpose. The Imperial Cancer Research Fund was not, as sometimes supposed, an independent body but was really a laboratory of the two Royal Colleges; the site at Queen-square had outgrown its need, and the work was to be transferred to Mill Hill in the autumn of next year. The College had, more than any other agency, given support to the Radium Beam Therapy research. He recalled the award of the honorary College medal to Dr. J. A. Murray, and of the Walker prize to Dr. E. L. Kennaway. Sir Cuthbert concluded with some account of the reception of Paris surgeons at the College in the summer, a visit which would be returned next year.

Mr. REDMOND ROCHE (M.R.C.S., 1894) referred to the shelving of the proposal for a diploma in dietetics. The College should, he thought, recognise certain weaknesses in the armamentarium of the general practitioner. He would like a standing committee of the licensing bodies to consider the instruction of doctors and students in matters specially useful to them in practice. Suitable questions, e.g. on dietetics, might be put in examination papers.—Mr. RICHARD GILLBARD (M.R.C.S., 1892) asked who selected the guests from among the members for the Buckston Browne dinner. The PRESIDENT replied that the curriculum conference was now closed but those who set the examination papers would bear in mind what had been said. "Specialist" questions were put from time to time. The selection of members for the dinner was made by a committee of the council.

Representation of Members

Dr. GILBERT ORME (M.R.C.S., 1899) then moved:

That this forty-sixth annual meeting of Fellows and Members of the Royal College of Surgeons of England again affirms that the Members, who constitute ninety per cent. of the College, should have some representation on the Council, a similar resolution having been passed forty-five times and never once lost.

It was, he said, almost incredible that for 47 years the members should have knocked without avail at the door of the council chamber. So convincing were their arguments that the resolution had never been lost. He could discover only one answer, namely, that the council were not conscious of any widespread desire for representation on the part of the members; but in the 1930 postal census in which 12,542 voting papers were sent out 6936 votes were cast for representation and only 156 against; and that in a profession which had the reputation of committing nearly all official correspondence to the wastepaper basket. Appeal to common sense having failed, he now appealed for fair play. Among the members who constituted 90 per cent. of the College surely there were some who could be of help to the specialists with their knowledge of general practice, e.g., the surgical questions in industrial practice, such as strained back, that led to wider fields of investigation. He would like the College to give a lead to the education of the public in the matter of quackery, osteopathy, and chiropraxis. It was the general practitioner who came into contact with these things; members should confer with fellows upon them, and regain some part of the freedom they enjoyed before the year 1843.

Dr. P. B. SPURGIN (M.R.C.S., 1898), who seconded the resolution, spoke of the increasing atmosphere of friendliness at this meeting. We know, he said, there is a feeling among the council that the interests of the common herd should be represented. Other bodies had their direct representatives; they had enhanced the prestige of the General Medical Council. The British Medical Association stood for democracy; in that body every member could rise to the highest position. He likened the situation to the outline of a quadruped of which the skull (being the council) was filled with the best grey matter but had no value without the backbone (being the general practitioner). They were not asking even for the whole backbone, they would be content with the caudal appendage; there were times when it might stand upright and even wag, but there was no risk that it would ever wag the dog. The time had come, he felt sure, to give some representation to the members who could produce some of the best brains in the country. If that required an amending Act the Society of Members would gladly contribute towards the expense.

In the discussion which followed Mr. HOWARD STRATFORD (M.R.C.S., 1899) suggested that when surgery was so big and complicated it was difficult for pure surgeons to keep in touch with everything. What about a gas attack, for instance? Did the council know all about measures for that?—Dr. A. E. BLACKBURN (M.R.C.S., 1904) said he had no criticism to make of an excellent report but he criticised the motion. He did not believe in democracy—just because the tail did control the head. But there was, he thought, no harm in occasional coöption by the council of members on a committee dealing with this or that.—Mr. GILLBARD (M.R.C.S., 1892) asked what was really the attitude of the fellows on the council; "we are unable," they say. But

2300 fellows could not represent 20,000 members. Members might, he thought, set up their own parliament—and organise their own dinners.—Mr. GRAYDON HUME (M.R.C.S., 1919) thought that finality had not been reached even in the Hunterian Museum, and the research farm was yet in its infancy. With the war cloud looming it would be useful, he thought, to realise the part that members would then play.—Dr. H. H. SANGUINETTI (M.R.C.S., 1897) said the College was excellently managed but the council was elected for surgery. Are examiners, he asked, specially suited to arrange the affairs of the profession? Whatever we think of the council we may still regret that members have no voice in their election.—Dr. C. L. BATTESON (M.R.C.S., 1898) asked if they might hear what objection to the resolution was raised by the fellows on the council.

The resolution being put to the vote the PRESIDENT declared it to be carried (in favour, 28; against, 6). "We all wish the College well," he said. How this is to be obtained is the question. Up till now the meeting had failed to convince the council of the need for change; but he recognised the friendly feeling present that day. With regard to unprofessional cults the College, he said, had opposed the Bill in the House of Lords at a cost of £920.

OXYGEN LAID ON

IT is notorious that the sight of an oxygen cylinder often depresses the patient; for the public still regard its use as a last resort. On the other hand, oxygen often has its greatest value in the early stages of illness (e.g., pneumonia) when it may reduce the effort of breathing and the burden thrown on the heart. Hence there is much to be said for any new method of giving it that will arouse less alarm or despondency. The arrangements now made at the Royal Free Hospital, London, go far to obviate unfavourable emotional reactions, for the oxygen is brought in pipes to the wards and is obtainable at the bedside without fuss or difficulty. A system of pipe lines 3000 feet in length takes oxygen at low pressure to taps in seven wards, each tap serving a group of beds.

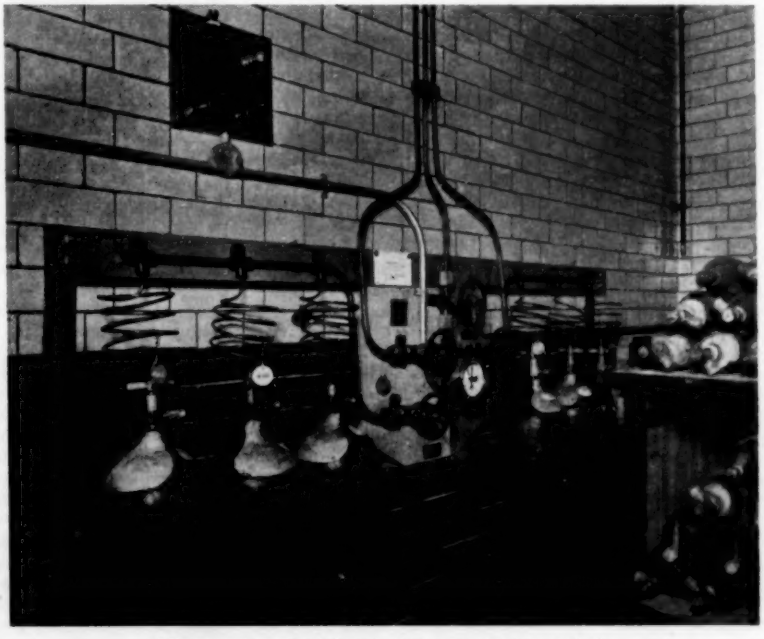
The source of supply is a group of cylinders in the porter's lodge; there are six cylinders each holding 150 cubic feet of oxygen, and they are arranged in a rack as shown in the accompanying photograph. By an arrangement of valves, either of two banks of cylinders can be connected to the pipe lines. In the centre of the control panel is a pressure gauge fitted with an electric contact that closes when the pressure falls below 100 lb. per sq. in. The closing of this contact sounds a buzzer mounted above the left-hand cylinder manifold, and at the same time lights a lamp. The porter on duty then takes the necessary steps to restore the pressure, either by putting another cylinder on the line or by changing over to the other manifold.

The high-pressure pipe-lines, which are of welded construction, travel outside the building as far as the points where they enter the wards. The mains then pass through the brickwork into the back of a reducing valve, which brings the pressure down to about 20 lb. per sq. in. The tubing in the wards is carried out with lighter-gauge copper tubing with soldered sleeve joints, small screw-down valves being provided near each group of beds. These valves are arranged to take a length of rubber tube that can be connected to any simple apparatus for administering the gas, or to an oxygen tent or other apparatus.

The whole of the high-pressure mains are installed with welded connexions and were tested to a pressure of 3000 lb. per sq. in. The seven wards now served contain 150 beds, and provision has been made for extending the service to four more.

As must be expected, the consumption of oxygen in the hospital has somewhat increased since the installation was put in; for oxygen is now used for patients to whom it might not otherwise have been given. This however is compensated for by the cheaper rate at which the large 150 foot cylinder can be purchased. The nursing staff, moreover, are relieved of the trouble of handling cylinders, and any risk attached to their use in the wards (explosion or fire) is eliminated. The saving in porterage and wear and tear on the lifts is also considerable; the porter's lodge, where the manifold is placed, is beside the roadway, and the cylinders thus have very little distance to travel to and from the lorries.

The installation was carried out by the British Oxygen Co., of Wembley, to the design of Messrs. Richards and Bright, consulting engineers.



The oxygen-supply of the Royal Free Hospital's installation.

ADVANCES IN CANCER RESEARCH

THE thirteenth annual report of the British Empire Cancer Campaign—a volume of over 300 pages—contains reports from nearly fifty different institutions and individuals whose investigations have received financial support. It is clear that many interesting results have been obtained during the current year.

ÆTIOLOGY

The various investigations into what may be called the fundamental problem of cancer fall into two clearly defined groups relating to the carcinogenic substances and to the virus tumours.

It has now become evident that the property of inducing cancer is not confined to the hydrocarbons having a phenanthrene nucleus, but is possessed also by other organic substances of quite a different chemical structure. A number of such substances having a nitrogen atom in their molecule have been synthesised in the research laboratory of the Royal Cancer Hospital, and one of them is remarkable in that it produces hepatomata when applied to the skin. It appears now that the problem of the chemistry of carcinogenesis is much more complex than was believed recently, and that the variety of tumours arising naturally in different organs might possibly be due to the formation under abnormal conditions of a variety of carcinogenic chemical substances. The knowledge that certain pure organic components produce malignancy when introduced into the body naturally opens up the question of the fate of these substances in the organism. This has been investigated by several workers, Dr. P. R. Peacock in Glasgow, Dr. C. C. Twort in Manchester, and Dr. I. Berenblum and Mr. L. P. Kendal, Ph.D., in Leeds, with the same result—namely, that these substances rapidly disappear from the site of injection and that this disappearance is due not to a rapid elimination but to a chemical change. Perhaps the most interesting, because the most unexpected, observations are those made by Dr. A. Haddow of Edinburgh. He found that the injection of carcinogenic compounds into animals bearing transplanted tumours greatly slowed the growth of these tumours, whereas substances chemically closely related but devoid of carcinogenic property had no such effect. This inhibition of growth is not specific for tumours, but can be demonstrated also for the normal growth of young animals, although it is relatively less striking.

The nature of an entirely different carcinogenic agent—namely, the agent present in the so-called filtrable fowl tumours—has been investigated independently by Prof. J. McIntosh of the Middlesex Hospital and by Dr. C. R. Amies working in the Lister Institute, and the same conclusions have been reached. By means of special high-speed centrifuges it has been possible to demonstrate that this agent is of a particulate nature of a size similar to, but somewhat smaller than, those that represent the causal agents of such typical virus diseases as vaccinia and fowl-pox. By a method of fractionate precipitation Dr. Amies was able to prepare a suspension of this agent free from fowl protein, and such a suspension could be specifically agglutinated by the serum of tumour-bearing fowls, in which an antibody to the agent could also be demonstrated by other methods. These two workers agree that the evidence so far obtained justifies the conclusion that the agents of these filtrable fowl tumours are of a virus nature.

It is important to bear in mind that an immune serum for these agents is a very different thing from an immune serum for malignant cells. This is clearly shown by the fact that a serum which will inactivate a cell-free extract of a filtrable fowl tumour and which will also agglutinate a suspension of the agent has no effect on the living malignant cell, in which the agent is present. Indeed Prof. McIntosh states that an anti-cancer-cell serum cannot be prepared with any regularity.

Until recently filtrable tumours have been found only in fowls. They are all connective tissue tumours which have appeared spontaneously. Prof. McIntosh has been able to show that sarcomata induced by the injection of carcinogenic agents were also filtrable—i.e., they contained a virus-like agent. The present report records the remarkable fact observed by Dr. L. D. Parsons of the Royal Cancer Hospital that a sarcoma which has developed in a mouse after the injection of a carcinogenic agent is also transmissible by a cell-free extract. This is the first recorded instance of a filtrable malignant tumour in mammals. The tumour has, however, the peculiarity that its growth in the mouse is accompanied by conspicuous changes in the blood.

TREATMENT AND INCIDENCE

The biological and therapeutic effects of radium have been actively studied in a number of different institutions. The view hitherto generally accepted that cell division is the factor which determines radiosensitivity is now being questioned by Dr. J. C. Mottram. The clinical results obtained in the different hospitals are now for the first time tabulated in a uniform manner. This is a great advantage since a direct comparison is now possible. The results obtained in the Marie Curie Hospital by radiotherapy of cancer of the cervix are very striking. Using the 5-year survival-rate and the division into four clinical degrees of the disease, the figures for a 5-year survival for the first degree are as high as 85 per cent. They fall to 66 per cent. for the second degree, 32 per cent. for the third degree, and 10 per cent. for the most advanced cases, the result for all cases irrespective of the degree of the disease at the beginning of treatment being 37 per cent. of 5-year survival. Figures such as these are the best propaganda to encourage patients to seek medical advice early and they should put a stop to the foolish statements, so frequently made even by medical men, that no cure for cancer has yet been found.

Of other investigations of importance for the treatment of cancer the studies may be mentioned of Dr. Cuthbert Dukes at St. Mark's Hospital on the lymphatic spread of cancer of the rectum, and of Dr. G. H. Gray at St. Bartholomew's on the lymphatic spread of cancer of the skin and in mammary cancer. Dr. Gray, whose report contains some striking illustrations, questions the permeation of lymphatics by cancer cells. He holds that when cancer cells enter a lymphatic vessel they do not remain for any length of time within the lumen but are rapidly conveyed to a lymph gland. He warns against the danger of excessive palpation of malignant tumours, because this may hasten metastatic spread and he doubts the justification for extensive operations planned on the permeation theory in so far as they require the removal of deep fascia.

Lastly, reference must be made to the striking statistical charts prepared by Dr. Percy Stocks, medical statistical officer at the General Register Office, demonstrating great variations in the incidence of cancer of the more important organs in the

different counties and boroughs of England and Wales, and to the statistical investigation by Prof. and Mrs. Kennaway on the remarkable increase in the recorded mortality from cancer of the lung. After discussing the factors possibly concerned, the Kennaways conclude that "no evidence has been found that tarring of the roads has affected the incidence of cancer of the lung upon the general population."

Great care has been taken in the difficult task of editing this report; and rightly so, because it ranks as an annual scientific publication. A study of its contents and of other recent publications of a similar kind leaves the impression that while the complexity of the cancer problem is increasingly evident each aspect of it is becoming better defined. Human ingenuity has rarely failed to solve a scientific problem when once it has been clearly and correctly formulated.

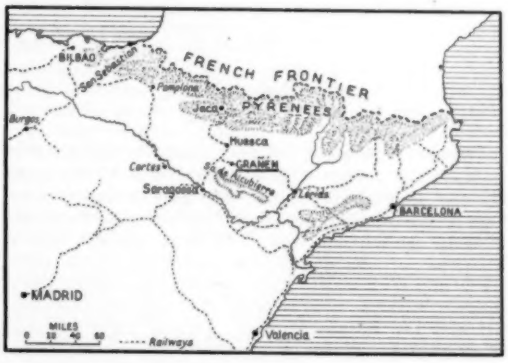
AN AMBULANCE IN SPAIN

THE following is a letter written by Mr. K. Sinclair-Loutit, a student of St. Bartholomew's Hospital, who went to Spain in charge of the ambulance unit sent out by the Spanish Medical Aid Committee. It is dated Nov. 6th.

"I am extremely sorry that your letter has not yet been answered, but we have been overwhelmingly busy. We have had up to date 1523 patients and our ambulances have gone about 14,000 miles. This, for two months' work, is not bad going, and has placed a very severe strain on all our resources. Of course, a large percentage of these cases are not very grave, but we have had days on which we have done twelve or fourteen major operations.

"The hospital is at Grañen, a small, dirty, ill-developed village in a key position behind a fan-shaped front. All the roads fall into it, and it is the railhead. It drains about 35 kilometres of front, it is the divisional hospital, and its prime duty is evacuation. We therefore only keep such cases as cannot be evacuated. We have a medical, a surgical, and a V.D. ward, with a total accommodation for 40 patients, which can be increased on emergency by a further 30. There are two theatres—one for major work, one for dressing—a receiving-room, and various other accommodations, the whole contained in a large, rambling house of feudal design. When we arrived (Sept. 8th) it was indescribably dirty and only half of it fit for habitation, and though in use as a clearing-station it was quite unsuited for medical work. We have now, in addition to carrying on our medical work, cleared over a thousand square meters of floor from dirt approximately one-third of a meter deep. Our working parties are just completing the clearance of the patio from many tons of accumulated dung. It is to be drained, levelled, and used for the parking and repairs of the ambulances. We have to do nearly all our own work here, as the man-power of the village is greatly reduced; 18 young men were taken by the fascists as hostages when they passed through the village, and most of the remainder are in the militia. Until recently in the kitchen all cooking was done over an open fire. The Spanish staff were first in awe of our Primus stoves and ovens, but are now delighted with them. We have also installed two coke ranges which seem to be unworkable without a skilled technician in continuous charge. There is no running water in the house, the supply of very dirty looking but not grossly contaminated water is brought daily by mule-cart. I have found a spring from which we now obtain quite pure drinking water. Similarly in everything we have had to start from scratch. Our drivers and orderlies installed electric light and built heating stoves and cupboards. Dr. Saxton (whom you may remember at Bart.'s) has proved himself quite a competent sanitary and civil engineer.

"We lie on a plateau between two ranges of mountains; to the right is Huesca which guards the pass to Jaca. It was there the Napoleonic invasion had one of its final reverses. To the left is the Sierra Alcubierre, in which there is much guerilla fighting. It is barren country, in summer dusty and mosquito-ridden, in winter cold, windswept, and approached



through a sea of mud. It is interesting to note that right up to within one kilometre of the firing-line agriculture continues. I was out surveying the ground for a front-line dressing-station and was led by a daft guide across a field open to fascist machine-gun fire. We kept dodging about for over an hour, as the position was enfiladed from two posts. We were sitting behind a small breastwork when we saw a peasant staggering across the field bearing two enormous baskets of pimientos. He paid absolutely no attention to the fire till two-thirds of the way across, when he sat down to swear. His effrontery was only equalled by his luck, for he got across the field unharmed. It is now crossed by a communication trench, in which one of our field nurses got shot—quite lightly. Only a little further back they were harvesting. It is extremely dangerous to wear Red Cross emblems or display them on vehicles near the line, as they merely form a target for the fascist forces. Our stretcher parties have been fired on, and the hospital train has been bombed and machine-gunned from the air. Similarly the mere suggestion of the display of the customary Red Cross ground flag convulsed the local comite de guerra.

"I have just been called away to superintend the installation of a refrigerator for canned blood. It is put up in 200 c.cm. glass phials under gas pressure. This practice is converting transfusion from a luxury to a routine treatment in suitable cases. This also shows how our hospital has progressed in two months. At first only the crudest intervention was possible. Abdominal surgery was unthinkable owing to the dirt. Now, though the place doesn't look like Bart.'s, our theatres are on a par with those in any cottage hospital, and we can and do tackle anything.

"The hospital is of necessity polyglot; the Government forces contain in their ranks practical

sympathisers from all European nations, so that in the wards one hears English, French, German, Italian, Polish, and Yiddish, though of course Spanish predominates.

"It is a tremendous social experiment this isolation of 29 English people, none of whom were previously known to each other. We are forced to live in conditions of considerable intimacy. We have turned two big granaries at the top of the house into dormitories where we sleep on mattresses or stretchers. On one occasion these had to be given over to patients and we worked our first 24-hour day. Cut off as we are, there are not many amusements, nor have we many books. We spend any spare time learning Spanish, listening to a wireless lent us by one of our Spanish interpreters, discussing the military and political situations and grumbling at the food, which on some days can only be described as bizarre. What we really need is a first-class radio, and a regular supply of newspapers, periodicals, and books. I believe a large consignment of food is on the way. Needless to say, there is a continuous call on the committee for money. You can help us greatly in that. There is also room for an absolutely first-class surgeon. Do you by any chance know of an ex-chief assistant who might fancy the job? Most of the major work is at present done by Dr. Aguilo, a very charming Spaniard.

"I have tried to compensate to some extent for the inevitable delay in answering, so I hope that this is of some interest to you. Thanks for your good wishes."

PANEL AND CONTRACT PRACTICE

The Year's Work

PRACTITIONERS

THIS is the time of the year when the chairmen of insurance committees give an account of the committees' doings during the previous twelve months. Two of the accounts before us have the added interest of being by medical men. Dr. D. Campbell, who is chairman of the St. Helens committee, says there are 32 names of principal practitioners and 6 permanent assistants in the local medical list, and that 18 practitioners are in partnership. During 1935 the sum of £18,218 was paid to practitioners for treatment, the 26 living in St. Helens receiving an average of £682 for treatment. The number of persons on doctors' lists at July 1st, 1936, was 42,949, the average number on the lists of doctors living in the county borough being 1610. Dr. E. A. Gregg, retiring chairman of the London committee, deals with 2143 practitioners in the metropolis who have on their lists 1,821,149 patients, the average number being 952 per list (excluding assistants), or 843 per practitioner. The sum distributed in respect of 1935 was £810,328, and the average amount per practitioner on the medical list was about £375.

In St. Helens 23 notices on the appropriate form were received from doctors claiming that they had rendered services outside the scope of medical benefit to insured persons on their lists, while in London the figure was 114, a much smaller proportion. The paradox is to be explained by the facilities available for treatment in hospital for Londoners requiring surgical treatment; it appears to be the exception for surgical treatment other than in its simpler forms to be given by London insurance practitioners. At all events, very few claims in respect of major surgery are made. Forms G.P.45 other than in respect of surgical, optical, or ray treatment are almost unknown, as the following analysis will show:

Ophthalmic services 75; ultra-violet rays 17; infra-red rays 3; diathermy 3; psychotherapy 3; surgical services 11; X ray service 1; radiant heat and massage 1. Six practitioners were concerned with the ophthalmic services and twelve submitted claims for the non-optical services.

The average cost of a prescription in St. Helens is 7·60 pence, and 2*s.* 11*d.* per insured person in respect of 4·59 prescriptions. In London a prescription cost 7·87 pence, and with an average of 4·85 prescriptions the cost per insured person was 3*s.* 3·24*d.*

REGIONAL MEDICAL OFFICERS

In 1935, according to the Minister's report, the total number of references in England to regional medical officers for advice as to incapacity for work was 444,964, of which 2117 were from insurance practitioners and the remainder from approved societies. Of these references 164,371 (37 per cent.) related to men and 280,593 (63 per cent.) related to women. The number of persons actually examined on incapacity references was 232,457. The number who were reported to have received a final certificate before the date fixed for their examination was 129,704, and 82,017 others did not attend for examination. Of the persons examined, 167,219 were reported as incapable and 65,238 as not incapable of work. Consultation references numbered 1047, of which 978 were from societies and 69 from insurance practitioners.

THE SERVICE

The number of insured persons entitled to medical benefit in England in 1935 was round about 14,994,000. Nearly 16,000 doctors were in insurance practice, and medicines and appliances were supplied as part of medical benefit at about 12,000 chemists' shops. The total expenditure on medical benefit was £8,917,300, of which sum insurance doctors received over £6,520,000 in respect of their duties of attending and treating insured persons, and £1,923,700 was paid to insurance chemists for the supply of drugs and appliances. It should, however, be remembered that from Jan. 1st to June 30th, 1935, the capitation fee payable to insurance doctors and the dispensing fees payable to chemists were still subject to an emergency deduction of five per cent. The remainder of the expenditure is accounted for as follows. About £204,000 was paid to insurance doctors in rural areas on account of mileage; £191,000 to doctors for medicines and appliances supplied by them personally or for medicines dispensed by them in country districts where patients are out of reach of chemists; £63,700 on account of insured persons who exercised their option to claim treatment (including medicines) through approved institutions; and £7900 on account of insured persons who were required or allowed to make their own arrangements for medical benefit. Nearly £7000 was set aside for other purposes—e.g., to enable country doctors to attend courses of post-graduate study—an outlay of £1100 enabled 45 doctors to attend short post-graduate courses; to provide

(*Continued at foot of opposite page*)

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A DOCTOR IN RETIREMENT

IV

I HAVE recently visited an exhibition of works of art which must be unique. It is a collection of genuine inn-signs which have been sent from all parts of the country to adorn the walls of a Bond Street gallery. Brave show though they make, these Boar's Heads, Black Bulls, Old Ships, Blue Boys, and Fox and Hounds, there is another and more important object in the exhibition than simply to amuse or instruct the sightseer. It is this: there is a growing tendency amongst some firms of brewers, and some of them are wealthy and important firms which should know better, to replace the old painted inn-signs by modern and vulgar ones, made of enamelled iron, on which are written the name of the inn. Instead of a noble painting of a square-rigged ship in full sail or of a pack of foxhounds in full cry, these unimaginative mass-production brewers have hung up in front of their premises what is no sign at all, but merely the name of the inn. Now this is altogether wrong. For one thing it is doing away with one of the few traces which remain of an earlier and more picturesque age, when every tradesman hung out a sign to inform the illiterate what goods he sold. The innkeeper is now the only shopkeeper or merchant who still keeps up this age-old custom. Surely it is a very short-sighted policy and misplaced economy on the part of the brewers to remove these old signboards, for a good painting representing a Man Loaded with Mischief, or that friend of the brewers the late Marquis of Granby, is far more likely to tempt a thirsty traveller to stop and enter and taste his ale, than is a commonplace enamelled plate. Fortunately there are certain enlightened brewers who are setting a splendid example, such as the Chichester firm of Henty and Constable, who employ a first-class artist, Mr. Ralph Ellis, to paint the signs on all their hotels and inns; and the Bury St. Edmunds brewers, Messrs. Green, King and Sons, whose principal sign-painter is Mr. E. M. Dinkel, and who take a great pride in preserving the signs on their houses.

Altogether and in every way this exhibition has turned out to be a great success. There is only one criticism which I venture to offer to the committee who organised it. They should provide a bar-parlour where the visitors to the show may get a tankard of ale to quench a thirst inevitable after gazing at four hundred and twenty-nine "pub-signs," every one designed with the praiseworthy object of stimulating thirst and inviting hospitality.

(*Continued from previous page*)

country doctors with or to assist them to maintain facilities such as telephones, motor-cars, and branch surgeries; and to establish or maintain essential practices which would not otherwise provide a competence. In a few cases special grants as high as £275 have been made to doctors in remote and inaccessible districts. While of course these grants come out of insurance funds, it should not be overlooked that the recipients have been assisted thereby to provide medical service for uninsured persons as well.

The belief by the human race in the occult, the un-understandable, is very, very old, and to judge from the constant crop of new remedies, new diets, faith-healers, and other much-lauded aids to health, is still as strong as ever. The practice of black magic is of profound antiquity, and the profession was mostly, if not exclusively, in the hands of women.

Amongst the odd grains of not very important news which have caught my eye in the newspapers is that this year is the bicentenary of the passing of the Witchcraft Act. The term witch includes, or included, many varieties of practitioner who exploited the foolish and the gullible—conjurors, sorcerers, quacks, diviners, astrologers, crystal-gazers, and necromancers. In all countries the witch was well known to possess magical powers; she could assume the form of other people and of animals; she was able to ride through the air, preferably on a broom handle or seated on the back of a bat.

The old laws against witchcraft were both pitiless and savage, and none more merciless than the ecclesiastical laws, particularly those of the Inquisition, which were framed to punish heretics. In England trials of witches were particularly frequent during the 17th century when there arose a professional class of witch-finders, who searched for witches and gave evidence in court against them. The originator and the most notorious of these witch-finders was Mathew Hopkins, son of the minister of Wenham in Suffolk. He had a smattering of the law, and in 1644 commenced his three years' career as a witch-seeker—"a trade never taken up in England till this." At first Hopkins was very successful. He proclaimed himself "Witch Finder Generall" and used to be invited by different towns in Essex, Norfolk, and Suffolk to search for witches. He and his two assistants, one a woman searcher, rode on horseback, and Hopkins's fee was twenty shillings for every town they visited. All the aged women, particularly those with a squint, or those who lived alone, were in terror when they heard that Mathew Hopkins the witch-finder was coming to their neighbourhood. It would sometimes happen that old women would come on their own account to be examined; "divers," says Hopkins, "have come ten or twelve miles to be searched, of their own accord, and hanged for their labour." The tortures and hangings of witches brought to trial by Hopkins were numerous. Sixty were hanged in Essex in 1644, and several at Norwich. In the same year sixteen executions took place at Yarmouth, and nearly forty the following year at Bury St. Edmunds, and others in Huntingdonshire. But the "Witch Finder Generall" was soon to overreach himself. He accused the octogenarian John Lowes, vicar for fifty years of Brandeston in Suffolk, of witchcraft, had him arrested and put to torture, when the old man "confessed" he had two "imps," one of which he had sent to sink a ship. For this he was found guilty and hanged at Framlingham, after reading his own burial service.

But at last Hopkins was to meet his match. The newly arisen witch-finder was the Reverend John Gaule, vicar of Great Staughton in Huntingdonshire. He believed in witchcraft but not in Hopkins. With great courage Gaule wrote a book in which he exposed the impostor. One passage in it runs: "Every old woman with a wrinkled face, a furr'd brow, a hairy

lip, a gobber tooth, a squint eye, a squeaking voice, or a scolding tongue, having a rugged coate on her back, a skull-cap on her head, a spindle in her hand, and a dog or cat by her side, is not only suspected but pronounced for a witch." The bold author concluded that Hopkins's "signs" discovered "no other witch but the user of them." This hint was soon taken, and being brought to the notice of the judges of the Norfolk assize, Hopkins was put upon his trial as a witch, and underwent application of his own methods of torture to extract a confession. With his thumbs and toes tied crosswise he was thrown into a pond to see if he "swam" or sunk. He swam, sure proof of guilt according to the "Witch Finder Generall," and so Mathew Hopkins ended his short but profitable career on the gallows.

In his "Hudibras," it is to Hopkins that Butler refers as "a leger to the devil"

> "Who after proved himself a witch
> And made a rod for his own breech."

The last English trial for witchcraft took place in 1712, the last in Scotland ten years later. In France and Spain trials and executions for witchcraft continued until the end of the 18th century, and a woman was burnt by the Inquisition at Seville in 1781. Vast numbers of witches were tortured and executed for witchcraft during the 17th century on the Continent. One judge alone, Benedict Carpzor, is credited with having passed sentence on twenty thousand victims.

* * *

There is no better reading than a good biography, though I must confess I prefer those about men who have not achieved riches or fame. To me the lives of the failures in life are often far more interesting to read than those of super-men who have become famous. The obscure and the unsuccessful often appear to me to be more likeable and sympathetic characters than the Great and Good. It is this interest in the unhonoured which set me inquiring into the lives and doings of certain none-too-respectable members of our own profession. These are the surgeons who served on board buccaneer and pirate ships in the 17th and early 18th centuries, when these two similar callings were at their height. There was the Frenchman, Alexander Exquemelin, who qualified as a barber-surgeon at Amsterdam and sailed for several years with the buccaneers. It is to him we owe a large part of our knowledge about those extraordinary men who plundered and burnt the Spanish settlements and towns in Central and South America. His famous book, "The History of the Buccaneers in America," was translated into English from the Dutch and published in 1684. Another barber-surgeon who shaved the beards and bandaged the wounds of the buccaneers and who also wrote a book about his adventures was Lionel Wafer, whose "New Voyage and Description of the Isthmus of America" gives a very readable account of his captivity with a savage tribe of Darien Indians, and how he saved his life by successfully treating, by bleeding, the favourite wife of the chief. A fellow-captive of Wafer's was one Richard Jobson who, tired of the dull routine of a druggist's assistant in London, had run away to sea to become a buccaneer; a cut-throat calling which he combined with the study of divinity, carrying always with him "a Greek testament which he frequently read and would translate extempore into English to such of the company as were disposed to hear him."

A less lovable pirate was Dr. Peter Scudamore, surgeon to Captain Bartholomew Roberts, of the *Royal Fortune*. He did many things unbecoming one of his learned profession, as stealing the surgical instruments of a brother surgeon, and, what gave far greater offence, a backgammon board from a fellow pirate. He could speak the Angolan language, and was one day caught red-handed attempting to foment a mutiny amongst a hold-full of stolen slaves. At last the gallows claimed him, when he died penitent but unregretted, at a wholesale hanging of pirates at Cape Coast Castle in 1722.

Nor can we take any pride in the career of Dr. Bullock, who attended the buccaneers when they landed and took a town on the coast of Peru; for the doctor, while the plundering was taking place, became so drunk as to be unable to accompany the troops on their return march to their ship, and so fell into the hands of the Spaniards. But any sort of a doctor was a luxury in a Spanish settlement, so Dr. Bullock, although a prisoner, was allowed to practise his profession, and was indeed "civilly entertained, especially by the women."

These few notes about a few strange medical characters cannot be brought to a close without a word or two about the most remarkable of them all, Dr. Thomas Dover, who remains immortalised by the diaphoretic powder which he invented. He was an amazing character, who sailed, if not as a pirate captain, as a very open-minded privateer captain, and was the author of "The Ancient Physician's Legacy to His County," a book which ran into several editions, and in which he claimed that almost every ill to which the human body is subject could be cured by copious draughts of metallic mercury. Dr. Dover it was who marched at the head of his troops when they sacked Guayaquil in Peru, and when plague broke out amongst his crew he gave orders to the surgeons to bleed each patient in both arms and leave them bleeding until each man lost not less than a hundred ounces of blood. This heroic treatment Dr. Dover followed up by copious draughts of oil of vitriol mixed with lemon juice and water. Well might the physician boast of his success, for out of one hundred and eighty men down with the plague, all were saved but eight, whose deaths Dover attributed to the strong liquor they had been given to drink by their messmates. Another adventure in the life of Thomas Dover was his rescue of Alexander Selkirk, the original of Robinson Crusoe, from the island of Juan Fernandez.

* * *

But I perceive that I am in danger of giving an overdose of these grains and scruples, so will retire once again into that rural obscurity to which I belong, and out of which nothing would have drawn me but the generous invitation of the Editor to contribute for one month to THE LANCET.

*** *During next month A Chronicler will be responsible for these columns.*—ED. L.

STAFFORDSHIRE GENERAL INFIRMARY.—The foundation-stone of the extensions to this hospital was laid on Nov. 7th by the Earl of Lichfield. The accommodation will be increased from 100 to 150 beds.

BOGNOR REGIS HOSPITAL.—Extensions costing £10,000 are to be made to this hospital as a memorial to the late King and permission has been received to rename it King George V Memorial Hospital. Originally a small building known as the Cottage War Memorial Hospital, the demands upon its 14 beds necessitated in 1932 the erection of a larger institution on the Chichester-road. This accommodation has also become insufficient, largely because of the number of road accident cases.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

ON Tuesday Sir NORMAN WALKER opened the 144th session of the Council. After mentioning the appointment of Mr. Harold Collinson as representative of Leeds University on Prof. J. K. Jamieson's acceptance of the chair of anatomy at Trinity College, Dublin, he congratulated Sir Henry Dale on receiving the Nobel prize for medicine, and announced that the subject of education, "our primary concern" under the Medical Acts, will occupy the consideration of the Council at this and probably one or two subsequent sessions. He went on to quote from an address, describing the origin and development of the Medical Students Register, delivered by Sir Donald MacAlister at Manchester in 1906. In this address Sir Donald pointed out that there is absolutely nothing in the Medical Acts about the general or non-professional education of medical students, and nothing about matriculation or preliminary examinations. The Royal Commissioners of 1882 had agreed that every intending medical student ought to pass an examination in general education before entering on medical study and that the subjects of this examination should not be of a technical or professional nature; but somehow the necessary provisions for giving statutory effect to these recommendations were not formally embodied in the new Medical Act which followed the Commission. The recommendations practically described a system that had already grown up. The question had arisen: on what conditions shall a student be registered? What must he do before he is invested by the Council with the rights and privileges, if any, of a registered medical student? At a very early stage most, if not all, of the bodies providing medical education had insisted that every one of their own students should first show that he had enough general education to justify his admission to a liberal profession, and to profit by the scientific and technical training that prepared him for it. The Central Register had had no chance of acceptance by bodies like these unless it was based on the same principle. Thus the Council had been impelled to require a "sufficient" certificate of preliminary education as a pre-requisite to registration. Again the question of "sufficiency" led to the defining of a minimum requirement, and to the enumeration of the authorities whose certificates as a matter of fact fulfilled the requirement. Without its seeking, the Council had thus had to embark on inquiries concerning general as well as professional education, and indirectly to exert an influence on the former as well as on the latter.

Sir Norman Walker also announced that the Medical Council of India was not at present forwarding any proposals for recognition of the degrees of Indian universities additional to the proposals adopted last May.

A vote of thanks to the President for his address was proposed by Prof. A. W. SHEEN and seconded by Prof. J. W. BIGGER. Sir Norman Walker was re-elected President for the period ending November, 1939.

The Council then proceeded to penal cases.

PETERBOROUGH AND DISTRICT MEMORIAL HOSPITAL.—The sum of £10,000 has been collected towards the £45,275 required for extensions to this hospital. They include a maternity ward and pay block which are both urgently needed.

MEDICINE AND THE LAW

Damages for Professional Negligence against Doctor's Widow

IN Connolly *v.* Rubra a judge, sitting alone without a jury, has awarded £5000 damages against the widow of a doctor on the ground of his alleged negligence—a serious warning to the medical profession of the risks of posthumous litigation. The patient died of tuberculosis in 1933. The defendant, Dr. Rubra, was seriously ill when the case first came into court last June; proceedings were adjourned on that account and he himself died in July. It is reasonable to suggest that the defence was prejudiced by the absence of his evidence at the trial.

Mrs. Connolly complained, on behalf of herself and her two infant children, that Dr. Rubra had diagnosed bronchitis in December, 1930, had remained in attendance on her late husband till his death from tuberculosis in July, 1933, and during that period had failed to diagnose his true illness or to make sufficient examination for symptoms of tubercle. The defence admitted diagnosing severe influenza with bronchitis in 1930 and admitted death from tuberculosis, but denied negligence and denied that death was due to, or was accelerated by, any neglect or unskilfulness on Dr. Rubra's part. Mr. Justice Greaves-Lord observed that it was not enough to show that a doctor had failed to take as much care as other medical men might have taken, or even as he himself might have taken; the plaintiff had to show a failure to take reasonable and competent care in treating the patient. The judge found that from July, 1930 (six months before the beginning of the final illness), there had been blood in the sputum and a progressive loss of weight. Medical evidence agreed that the presence of blood indicated one special danger: so long as it was present, the possibility of tuberculosis could not be eliminated. The failure to have the sputum microscopically examined in 1930–31 was not a mere failure to take care, but an omission to take elementary care such as no medical man should have been guilty of; if that examination had occurred, tuberculosis would have been discovered in time for treatment to be possible. The radiogram, when it was taken, indicated tuberculosis in the early part of 1932 and possibly much earlier; it was not possible to assume that the disease was not present in 1931. The court held that, if proper steps had been taken, the disease would have been found in 1931; if so, it might have been arrested and the patient's life might have been much prolonged. In view of the change in the patient in 1932, there was no excuse in not considering tuberculosis in the early part of 1932 when there might still have been hope of arresting it. One of the medical witnesses indicated to the court the possibility of an alternative diagnosis. Had the case been a simple one, said the judge, he might have come to the conclusion that Dr. Rubra had formed the alternative diagnosis and had been justified in doing so. But, as Dr. Rubra's evidence could no longer be obtained on that point, the idea of an alternative diagnosis remained a mere suggestion. Thus we see how gravely a doctor's case may suffer by his death.

The court had to assess the financial consequences to the widow and children. Mr. Connolly was a civil servant employed at a salary just over £1000 a year, with the chance of promotion to a grade rising to £1400, with a pension at 60 of £536 5*s*.

and a gratuity of £1400. He was a delicate man; it was possible that he would not have responded to treatment and that his expectation of life might have been less than normal. The award of £5000 was apportioned as £3500 to the widow, £700 to the elder child, and £800 to the younger child. A stay of execution was granted, so that more may be heard of the case. The evidence for the plaintiff was carefully stated in the judgment. It was said that after severe coughing in 1930, the patient went to Torquay and, on his return, was told by Dr. Rubra that the cough would probably remain in the form of chronic bronchitis or catarrh. This was said to have deterred Mr. and Mrs. Connolly from further inquiry during 1931. During severe illness in February, 1932, when influenza was diagnosed, the doctor was stated to have accounted for the condition by suggesting tonsillitis or adenoids; night-sweats were attributed to rheumatism, and the idea of a second opinion was put aside on reassuring statements from the doctor that he himself was experienced in chest complaints. The sputum test was tried for the first time in February, 1932; when it proved negative, Dr. Rubra (it was alleged) took no further steps. Mr. Connolly was examined by a consultant in March, 1933, when a radiogram of the lungs left no doubt of the diagnosis; sputum tests confirmed it. The opinion on the radiogram was that the condition, though serious, was reasonably curable. Death took place, however, three months later. It will be observed that the failure to examine the sputum was regarded as the cardinal act of professional negligence.

Hospital Patients' Property

The Middlesex public health committee has, in consequence of the appropriation of the county hospitals, framed regulations for the refund of property found on patients. These are given in the *Public Assistance Journal* of Nov. 13th. They do not apply to any case where it is known that probate or letters of administration are being sought. Clothing and articles of no intrinsic value are returned to the nearest living relative. The wedding ring of a deceased patient, if the estimated value does not exceed £3, is returned to the widower or to an only child. Generally, if money or other property is claimed on the ground that it did not belong to the patient, the point is referred to the clerk of the county council for investigation and disposal. Otherwise money found on a patient or handed over by him for safe custody is returned to him or, with his formal consent or written authority, to such other person as he may direct. If he is not physically fit to consent, and if his wife or other dependant applies, a sum not exceeding £3 may be handed over to the applicant, provided that the hospital steward is satisfied that the applicant is such a dependant and is in urgent need. In the event of death in hospital, a sum not exceeding 30*s.* can be handed over to necessitous dependants; subject to this, there are special arrangements for funerals where the council holds money or valuables to the amount of £15 or upwards. In the latter case, either the relatives can arrange for the funeral with an assurance from the hospital steward to the undertaker that a sum not exceeding £15 will be reserved for this purpose; or, if there are no relatives or friends ready to act, the council will pay up to £15 for a private funeral; if the relatives or friends are willing to provide a private funeral and the amount in the council's hands is less than £15, the assurance to the undertaker will extend to the less amount. These arrangements for refunding seem reasonably simple and just. Inasmuch as legal complications are never entirely absent, applicants will probably take advantage of the permission to refer to the clerk of the council in cases which seem not to be covered by the new regulations.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. O. D. Brownfield, O.B.E., to *Pembroke*, for R.N.B.; H. Hurst to *Pembroke*, for H.M. Dockyard; W. Flynn to *Victory*, for R.N.B.; A. J. Tozer to *Pembroke*, for Sub-Depôt, Sheerness; P. N. Button, O.B.E., to *Furious*; and J. C. Souter to *President* for course.

Surg. Lt.-Comdr. J. Cussen to *Exeter* (on recommg.).

Surg. Lt. R. W. G. Lancashire to *Exeter*.

Mr. G. M. Holliday of Leeds has been appointed Admiralty Surgeon and Agent for Leeds.

ROYAL ARMY MEDICAL CORPS

Lt.-Cols. A. C. Elliott and E. D. Caddell, M.C., having attained the age for retirement, are placed on ret. pay.

Majs. F. G. A. Smyth and K. P. Mackenzie to be Lt.-Cols.

Maj. W. I. FitzG. Powell is restd. to the estabt.

Lts. (on prob.) secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931: A. F. H. Keatinge, J. A. Manifold, W. G. MacDougall, R. A. Smart, R. J. Niven, and D. G. Levis.

To be Lts. (on prob.): W. D. Eustace, I. N. Fulton, N. R. Murdoch, and S. H. Gibbs, and is secd. under Art. 213 as above.

TERRITORIAL ARMY

Capt. A. H. Whyte to be Maj.

M. S. Campbell (late Cadet Sergt., Felsted Sch. Contgt., Jun. Div., O.T.C.) to be Lt.

Supernumerary for service with O.T.C.: Capt. R. F. Phillips (emplyd. Univ. of Lond. Contgt. (Med. Unit), Sen. Div., O.T.C.) resigns his commn.

REGULAR ARMY RESERVE OF OFFICERS

Col. H. R. Bateman, D.S.O. (late R.A.M.C.), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ROYAL AIR FORCE

Wing Comdr. T. J. D. Atteridge to Headquarters, R.A.F., Aden, for duty as Deputy Principal Medical Officer (Hygiene).

Flight Lts. A. W. Callaghan to R.A.F. General Hospital, Hinaidi, Iraq; and O. S. M. Williams to R.A.F. Station, Lympne.

Dental Branch.—Flight Lt. F. F. Kennedy to R.A.F. Depôt, Middle East, Aboukir, Egypt.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: G. R. McRobert and A. C. Chatterji.

Lts. (on prob.) to be Capts. (on prob.): P. A. Hubbard and F. E. McLaughlin.

Indian Medical Department.—Asst. Surg., 1st Cl., Osborne Halliburton Gade to be Lt. (Sen. Asst. Surg.).

Maj. (Sen. Asst. Surg.) K. W. Blinkworth and Lt. (Sen. Asst. Surg.) R. C. Ireland retire.

DEATHS IN THE SERVICES

Colonel JOHN COLPOYS CONNOR, who died on Nov. 16th at Hythe, Kent, was born in Ireland in August, 1867, the son of the late John Connor of Stoneyford, Co. Antrim. He was educated at Queen's College, Belfast, and the Royal University of Ireland and qualified M.B. R.U.I. in 1889. He joined the R.A.M.C. in 1891, became lieut.-colonel in 1913 and colonel in 1921, retiring in 1924. He served in South Africa, 1899–1902 (Queen's medal with two clasps, King's medal with two clasps), and in the European War, being mentioned in dispatches, and created C.M.G. in 1917. He had also acted as A.D.M.S., Salisbury Plain and South Midland Area. He married in 1906 Evelyn, third daughter of Francis Archibald Primrose of Torquay.

CORRESPONDENCE

BASES OF NATIONAL FITNESS

To the Editor of THE LANCET

SIR,—In your leading article of Nov. 21st you quote from a medical writer in one of the daily newspapers. I had not seen this particular article, but I am impressed, because it is the one and only time, that I am aware of, when anyone has emphasised in the press the mental aspect in the campaign for national fitness. "Individual courage" and "happiness before physique" are I think matters of great importance which must not be overlooked.

There are certainly many sides of the problem which we, as a profession, must stress to those who are preparing for new legislation in Parliament, and amongst the matters which need consideration this question of mental health is of great importance. We must not allow our legislators to slip back into the old fallacy that a healthy body will produce a healthy mind. The existence of anxiety, or indeed any other psychoneurotic tendency in an individual, will in most cases effectively prevent him from getting benefit from physical training. Moreover the psychoneuroses are, as we now know, responsible for much invalidism and general inefficiency amongst the whole population. It should be, therefore, the responsibility of the profession to urge that, instead of a campaign directed to the betterment of the "national physique," which is the phrase which has been used chiefly in the lay press, efforts should be made for "national fitness," the concept which you have adopted so appropriately. If this is to become an A1 nation then certainly we must have a policy of social betterment, of sounder feeding; and of physical recreation, but we must also think hard and spend wisely to improve the mental health—the balance and "adjustment" of the individuals who compose the nation.

"Keep fit" classes and playing-fields are splendid. It is less easy, perhaps, for our legislators to realise that child guidance work, psychotherapeutic clinics, and education for mental health are fully as important.

I am, Sir, yours faithfully,

London, W., Nov. 23rd. J. R. REES.

INTRACRANIAL INJURIES OF THE NEW-BORN

To the Editor of THE LANCET

SIR,—If it is still true, as you say in your last issue, that "the general opinion of intracranial injuries of the new-born is that they are . . . better fatal," it seems clear that those who have worked at this subject and have learnt the incorrectness of the old view above recorded must increase their efforts to convince others. The paper by R. H. Nattrass in the *Medical Journal of Australia* will help by emphasising the frequency of intracranial birth injury, especially in its slighter forms, and by restating some important points in treatment.

The neonatal deaths in England and Wales amount to approximately 19,000 each year, and it is obvious that we cannot hope for any reduction in the number ascribable to birth injury so long as general opinion of this lesion remains morbidly and unjustifiably pessimistic. This pessimism has presumably arisen: firstly, because it is common knowledge that intracranial birth injury may be fatal, and that severe but non-fatal trauma is occasionally followed by very serious physical or mental disability; secondly, because examples of (*a*) spastic paralysis due to congenital maldevelopment, (*b*) various types of amentia, and (*c*) other less common non-traumatic disorders are sometimes incorrectly ascribed to the trauma of birth; and thirdly, because there is a very human practice of consoling the mother for the death of her infant during or shortly after birth by assuring her that if the child had lived he might or would have been crippled.

My experience during the thirteen years that I have been pædiatric physician to the Liverpool Maternity Hospital has encouraged me to take an increasingly optimistic view of this question, even when allowance is made for two factors which undoubtedly influence the problem—namely, that slighter cases are diagnosed more often, and that treatment is improving. There is no treatment in the whole range of medicine or surgery which does not suffer if it is carried out in an atmosphere of pessimism, and I trust that, in the interests of the new-born baby, general medical opinion may soon become enlightened regarding the prognosis of intracranial birth injuries.

I am, Sir, yours faithfully,

Liverpool, Nov. 23rd. NORMAN B. CAPON.

INJECTION TREATMENT OF HERNIA

To the Editor of THE LANCET

SIR,—I heartily endorse Mr. Maurice Lee's remarks in your issue of Nov. 14th. I have been using injection treatment for inguinal hernia during the past six years, and the more I see of its results, the more I am convinced that it has a great future. It is free from operative and anæsthetic risk and *in properly selected cases* the results are excellent. The solution I use is that evolved by the late Dr. Ignatz Mayer of Detroit, U.S.A., who carried out this treatment for over thirty-five years with great success. It is prepared for me by Mr. J. G. Parsons, chemist, of 156, Church-road, Hove. My technique has been frequently, and fully, described elsewhere.[1]

In any commercial undertaking the customer who does not see what he wants walks out and goes to the opposition shop. Patients confronted with operation always ask: "Is there any alternative non-operative treatment?" If we tell them "No," some will seek advice in the opposition camp of the unqualified practitioners. These in the past have not been slow to exploit and, through lack of proper training, bring into disrepute sound but novel methods of treatment. If a patient has a hernia and asks: "Is there an alternative non-operative treatment?" the true answer is: "Yes, there is; injection *in suitable cases*." If the medical attendant is unacquainted with the treatment, that is no valid reason for condemning it. His patient who is subsequently cured by injections only thinks him a fool or worse. Nearly three hundred years ago William Penn wrote: "Neither despise nor oppose what thou dost not understand."

I would particularly draw attention to the statement on p. 1107 of your issue of Nov. 7th that "inquiries at selected hospitals have shown that though most of them do not employ injection, *it is regarded as effective and safe in those that do*." Is the opinion of those who have not tried it worth the breath with which it is uttered? Experto credite.

I am, Sir, yours faithfully,

ST. GEORGE B. DELISLE GRAY.

Queen Anne-street, W., Nov. 21st.

[1] Brit. Med. Jour., 1932, ii., 12; Med. Press and Circ., 1934, ii., 286; Malngot's Post-Graduate Surgery, London, 1936, vol. ii., p. 3245.

ŒSTRIN IN TOXIC GOITRE

To the Editor of THE LANCET

SIR,—In your issue of Nov. 21st Dr. Foss stresses the necessity for massive doses of œstrin to obtain results. In particular he mentions the excessive doses he has used for the affection of the skin known as kraurosis vulvæ, "much larger doses than normally used in human therapy."

It would appear from experimental work on animals that the injection of crystallised folliculin and its salts stimulates the development of cancer, and that carcinoma of the uterine cervix, mammary cancer, and cancer of the prostate gland have all been produced in this way in animals. Can the risk of stimulating a cancerous neoplasm be entirely dismissed when such injections are given to the human subject, more especially if the subject is predisposed? Dermatologists have seen in the past the disastrous results of a variety of skin remedies; to mention only two, thallium acetate in the treatment of tinea capitis, X rays in the treatment of lupus vulgaris. In these the risks were only recognised after the event. In the case of œstrin there seems to be definite experimental proof in advance.

These preparations are being recommended with increasing frequency, and it is a singular paradox that in the midst of a widespread campaign against cancer the use of remedies which are potentially carcinogenic is extending. Should not a woman be informed of the possible risk to which she is to be exposed and her consent to the treatment be obtained before injections are given, in the same manner in which the risks of any surgical procedure are explained and consent obtained for the operation?

I am, Sir, yours faithfully,

Welbeck-street, W., Nov. 21st. ELIZABETH HUNT.

*** Reference to the possible risk of inducing cancer with œstrin will be found in our report of last week's discussion at the section of obstetrics and gynæcology of the Royal Society of Medicine (p. 1269).—ED. L.

CHLOROFORM CAPSULES

To the Editor of THE LANCET

SIR,—May I add my testimony to that of Lieut.-Col. T. Hunter in his letter to THE LANCET of Oct. 24th on the safety of chloroform as an anæsthetic. In a long period of service in India I used chloroform almost entirely, without any fatality attributable to the anæsthetic. Other methods and other anæsthetics have their advantages, but chloroform has still its own advantages and uses, and it is a mistake to decry its usefulness and to exaggerate its dangers for all occasions, as it is the custom to do nowadays.

After my retirement I took up the suggestion for the use of chloroform by midwives as an analgesic in childbirth and, with the help and interest of the National Birthday Trust Fund, crushable capsules (brisettes) of 20 minims of chloroform were tried out in maternity hospitals, and in many hundreds of cases with success, with few if any bad results. I agree that in hospitals, as shown in your annotation in the same issue (p. 992), Dr. Minnitt's or some other gas-and-air apparatus may be preferred. But I am sure that those mothers who are attended by midwives in their own homes, as is the case with 60 per cent. of the births in this country, can be more easily given safe relief from the pains of childbirth by the use of these capsules. Instructions and rules for their use were drawn up, and were followed in the investigation and trial of the capsules in maternity hospitals. But the fear of chloroform—for the greater part, unnecessary fear—has militated against the training of pupil midwives in their use. Midwives are allowed to use bromides, chloral, and opium, and chloroform capsules are no more dangerous. With a short training in their use and attention to the simple rules they can, I am sure, be employed with safety and advantage.

I am, Sir, yours faithfully,

W. D. HAYWARD,

London, W., Nov. 19th. Lieut.-Col. I.M.S. (retd.).

UVEOPAROTITIS

To the Editor of THE LANCET

SIR,—The important conclusions drawn by the authors of the paper on uveoparotitis published in your last issue merit the consideration of ophthalmologists and physicians alike. Even if these conclusions appear to be vague, they will achieve good in emphasising the fallacy of regarding this disease as essentially tuberculous. Admittedly, some observers have presented a strong thesis in favour of this assumption, yet a different type of case is met with which one would be very hesitant to label tuberculous. In two examples that I have followed up since my report in THE LANCET of 1934, to which these authors refer, the patients have remained in good health, and these certainly appear to belong to the latter variety.

I am, Sir, yours faithfully,

Windsor, Nov. 24th. C. B. V. TAIT.

To the Editor of THE LANCET

SIR,—The question of whether uveoparotitis is always of tuberculous origin has been raised again, and I think that various points arise in the paper by Lewis, Raines, and Stewart, published in THE LANCET last week, which require an answer. In recording a new case of uveoparotitis these authors suggest that this syndrome "may not be due to any one specific infection," but to my mind they produce no evidence to refute the contention of Thomson and myself that this condition is always of tuberculous origin.

They state that "tubercle bacilli have never been demonstrated in this condition"; but this is incorrect and they apparently realise this in the later statement that "guinea-pig inoculations have *nearly* always been negative." The demonstration of the tubercle bacillus is extremely difficult in this type of tuberculosis, but Cavara (Boll. d'oculist., Firenze, 1928) succeeded in producing tuberculosis in a guinea-pig inoculated with portions of an affected lacrymal gland; the inoculation experiments failed in three rabbits and two guinea-pigs before a positive result was obtained. In our second paper (THE LANCET, 1934, ii., 743) Thomson and I recorded a case previously under the care of Mr. Lawson of Leicester. This case was recorded a second time (Brit. Med. Jour., 1934, ii., 1041) by Tanner and McCurry, who by this time had succeeded in demonstrating tubercle bacilli in sections from an affected parotid gland.

Turning to the new case record, there can be no doubt that this is an example of uveoparotitis with the unusual development of a scotoma, this finding only once being noted before (Souter, W. C.: Trans. Ophth. Soc. U.K., 1929, xlix., 113). The Mantoux test was strongly positive but we are not told whether or not there was any *focal* reaction, the presence of which would be of paramount importance. The blood sedimentation-rate is not recorded and no mention is made of the heart, though it appears to be enlarged in the radiograms. We have, therefore,

the case of a man whose father died of pulmonary tuberculosis, who had an attack of slight general ill health in 1926, a lung illness of somewhat doubtful origin in 1934, an attack of uveoparotitis with pyrexia in 1935, and a strongly positive tuberculin reaction in 1936. Yet although the authors advance no alternative theory based on facts, they are unable to agree that tuberculosis forms the basis of the uveoparotitis in this case.

Their statement that "in previously reported cases a period of malaise has been described before the onset of frank uveoparotitis" does not contain the whole truth. In the 47 cases reviewed by Thomson and myself prodromal symptoms had occurred in 20 only. But I think one of the most important points raised in their paper is the statement that "the presence of a round-celled infiltration, even together with giant cells, is not always necessarily a proof of a tuberculous infection"; this statement, of course, must be admitted, but I think it is of the greatest significance that all the biopsies performed either on the iris, parotid, or lacrymal gland in this syndrome have shown identical microscopic appearances, and the pathologist concerned has unhesitatingly labelled the section tuberculous. Further, in the new cases recorded by Thomson and myself, as well as in Souter's case and others subsequently recorded from Reading and Leicester, the sections have been examined by Prof. M. J. Stewart; there has never been any question about the identity of the condition, and while admitting that round cells and giant cells do not necessarily mean tuberculosis I should like to know if there is any proof that any other condition can produce the characteristic picture which has occurred in all these sections.

To say that "even if miliary tuberculosis supervened it might be argued that the uveoparotitis itself was not necessarily tuberculous," is to my mind no argument at all. Here we have a syndrome in which all affected biopsy material shows the histological appearance of tuberculosis and in which four persons have died; one of these died of pernicious anæmia, and the pathologist concerned did not consider this to be associated with the uveoparotitis, which had healed; the three remaining cases all died of miliary tuberculosis, and showed the characteristic microscopical changes in the affected parotid glands. I maintain that there is nothing to suggest the presence of "another allergen" operating in these three cases.

Finally I suggest that the latest case to be recorded, far from throwing doubt on the universal tuberculous ætiology of this syndrome, rather lends support to this theory.

I am, Sir, yours faithfully,

Leeds, Nov. 23rd. HUGH G. GARLAND.

ÆTIOLOGY OF ACUTE RHEUMATISM

To the Editor of THE LANCET

SIR,—Dr. Poynton's request for opinions on the current nomenclature of streptococci will, I hope, lead to some authoritative pronouncement on the subject.

Since I took an active part in the work recorded in Coburn's paper in your issue of Oct. 31st I may be able to contribute a little information, and this can best be accomplished by referring to a specific case quoted by him. The history reported on p. 1029 is that of a boy who contracted follicular tonsillitis on Feb. 17th, 1935. Clinically this was a straightforward streptococcal sore-throat. The predominant organism, also present in other members of the family, was a hæmolytic streptococcus belonging to Group A (Lancefield) Type 13 (Griffith). In common terms it was *Streptococcus pyogenes*. This particular type is a common epidemic strain—hence it may be classified *S. epidemicus*. It can produce scarlet fever, and is entitled to be named *S. scarlatinæ*. Otitis media and puerperal sepsis are frequently due to it, and I have seen Type 13 pyæmia, septicæmia, and pneumonia. Thus to *S. pyogenes*, vel *epidemicus*, vel *scarlatinæ*, vel *rheumaticus* we can add a number of qualifying adjectives. We add nothing to our knowledge! By retaining a term which is in common use we shall, in time, realise that the ordinary *Streptococcus pyogenes* is a villain playing many parts. One of his minor rôles is in the pathogenesis of acute rheumatism. What part he plays in this act, and how, is as yet unknown; it is certainly not by the mechanism which justifies the qualification "pyogenes," and the qualification "rheumaticus" is also doubtfully deserved.

We may find some practical value in qualifying the classification of hæmolytic streptococcus by the addition of a serological type number. Although we do not yet know the significance of the fact that this boy's organism was Group A, Type 13, we have a reasonable chance of recognising and identifying a similar organism obtained from another source.

I am, Sir, yours faithfully,

W. H. BRADLEY.

Department of Medicine, University of Cambridge, Nov. 23rd.

THE MEDICAL REGISTER

To the Editor of THE LANCET

SIR,—I am directed by the President of the Council to say that he would be glad if you could publish this intimation that any orders for the office edition of the Medical Register, 1937, published by the Council at the special price of 10*s*. a copy, post free, must be received, with a remittance, at the office of the Council not later than Dec. 31st, 1936.

The office edition differs from the ordinary edition of the Register to the extent that it does not contain reprints of the Medical and Dentists Acts and other preliminary matter, and is printed on more inexpensive paper and bound in boards. It includes, however, the same entries relating to registered medical practitioners as are included in the ordinary edition, and is therefore equally serviceable to public authorities and others who find it necessary to ascertain whether particular persons are registered medical practitioners or not.

I am to take the opportunity of stating that the Council also prepare monthly lists of names added to, and removed from, the Register, and that particulars of the terms and conditions upon which copies of these lists may be made available can be obtained on application to the office of the Council.

I am, Sir, yours faithfully,

MICHAEL HESELTINE,
Registrar, General Medical Council.

44, Hallam-street, Portland-place, London, W.1, Nov. 19th.

Mr. Hugh Lett will deliver the Bradshaw lecture to the Royal College of Surgeons of England on Thursday, Dec. 3rd, when he will speak on the early diagnosis and the treatment of renal tuberculosis. A week later on Dec. 10th Dr. George W. Corner, professor of anatomy in the University of Rochester, will address the College on Salernitan surgery in the twelfth century when he gives the Thomas Vicary lecture. Both lectures will take place at the College at 5 P.M.

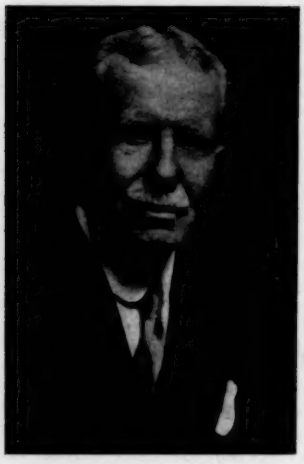
OBITUARY

WALTER HOLLAND OGILVIE, K.B.E., C.B., C.M.G.

LATE DIRECTOR OF MEDICAL SERVICES, INDIA

THE death occurred at the age of 67 in Edinburgh on Nov. 20th of Major-General Sir Walter Ogilvie, a distinguished member of the I.M.S.

Walter Holland Ogilvie, born in Alexandria, was the son of the late Dr. J. F. Ogilvie, a prominent officer in the Egyptian medical service. He was educated at Bedford Grammar School and Edinburgh University, where he graduated as M.B., C.M. in 1891, obtaining later the degree of D.Sc. He entered the Indian Medical Service and all his multifarious duties were in connexion with that service. He remained in military employ till June, 1912, when he was appointed medical and sanitary adviser at Delhi. He served for a long period with the 40th Pathans, but was on several occasions ordered from regimental duty to civil employment. He was on famine duty in the Central Provinces in 1897, and in 1900 was present at the relief of Peking. In 1912, when he was appointed medical and sanitary officer at Delhi, he was also civil surgeon and superintendent of the district jail. He remained in Delhi for four years and was then appointed health officer at Simla, but in 1916 in response to repeated applications he was able to see military service during the war. He joined the 7th (Indian) Division and was present at the capture of Baghdad; and later, being transferred to Egypt, he was with Lord Allenby in the final operations against the Turks. In 1917 he received the C.M.G. and in 1923 was appointed C.B. (Mil.).



SIR WALTER OGILVIE
[Photograph by Elliott & Fry

At the conclusion of hostilities Ogilvie returned to India and in 1927 was appointed Director of Medical Services. In this post he showed himself especially anxious for certain reforms within the organisation of the I.M.S., for which however the political times were found to be inopportune. In 1928 Ogilvie was made a K.B.E., and in 1929 he retired from the service for which he had worked with such distinction under the age regulations.

WILLIAM LEONARD BRADDON, M.B. Lond., F.R.C.S. Eng.

THE death of Dr. W. L. Braddon, which occurred at the end of September at Serimban in the Federated Malay States, brought to a close an interesting career. Born in 1861, the son of a doctor who practised at Upton-on-Severn, his early education was received at Owens College, Manchester (Victoria University), while he completed his medical studies at Guy's Hospital. He qualified as M.R.C.S. in 1884 and took the diploma of F.R.C.S. Eng. in the following year, while in 1887 he graduated in the University of London as M.B., B.S. He was a distinguished student throughout his career, gaining a scholarship at the hospital and a gold medal in forensic medicine at the university, after which he entered into partnership with his father at Upton-on-Severn.

But the roving spirit which he had manifested through his student days prevailed, and he made several voyages as medical officer in connexion with various shipping lines, and eventually settled down as district surgeon in Malaya. It was then that he began to take a practical interest in tropical diseases, the results of which gained him distinction; his researches into the ætiology of beri-beri were of a valuable nature and were recognised as such by the award to him of the Stewart research prize of the British Medical Association in 1912. Dr. Braddon added to his medical duties investigations into the production of rubber, became a successful planter, and was closely interested in the problems which its production presented. When the war broke out he joined the R.A.M.C. with the rank of major, and his long and practical acquaintance with malaria enabled him to render valuable service in Salonika.

Dr. Braddon was widely known by all classes of society in the F.M.S. He was president of a large estate owners' association, had been a coroner and an immigration officer, and a popular sportsman, and one is not surprised to learn that in Serimban a street has been named after him. He married in 1897 Miss Marion Philpott, by whom he had three daughters, two of whom are married and live in Malaya.

HENRY GORDON GREAVES, M.B. Camb.

To the grief of a large circle of friends and patients Dr. H. G. Greaves, anæsthetist to the Cardiff Royal Infirmary, was the victim of a fatal accident on Nov. 18th, being knocked down by a motor-car. He was moved to the infirmary and died almost immediately afterwards.

Gordon Greaves was a Derbyshire man, his father being a bank manager in Derby. He went to Cambridge and graduated as M.B., B.Ch. in 1911, having received his medical education at St. Bartholomew's Hospital where he was, for a time, resident anæsthetist. He then took a post as resident medical officer to the Royal Boscombe and West Hants Hospital at Bournemouth, and later commenced practice in Limpsfield. There he did excellent work as a general practitioner, and we learn from Dr. G. D. Laing, who later became his partner, what a good and straight colleague he was. At the outbreak of the war, in August, 1914, Greaves went to France and saw much heavy fighting and was in the Mons retreat, but when he came home in 1915 he was unfit for further service abroad. But he had now to take on the work of two, for Dr. Laing, in his turn, went to the front. With the exception of some six months Greaves bore the burden of the practice until the end of the war, but he was, by that time, obviously not strong enough to meet the strenuous physical claims of a general practitioner in a country district, and he retired to Cardiff to become a specialist in anæsthesia, a subject which had attracted him from his early professional days. His leaving Limpsfield was the subject of great regret, for not only was he an efficient and extremely kind doctor

but he had entered keenly into the social life of the place. He was a good actor and helped to found a dramatic club in Oxted which is still running successfully. He proved of great use in getting the local cottage hospital started, he played cricket for the village, golfed, and was a good billiard player. The high regard of his friends and patients was manifested on his departure by the presentation to him of a motor-car.

When Greaves settled in Cardiff in 1923 he was the only specialist in anæsthetics in the city. He was soon appointed lecturer in anæsthetics to the Welsh National School of Medicine, and anæsthetist to the Cardiff Royal Infirmary, working in the surgical unit of the school; he became also anæsthetist to the Prince of Wales Orthopædic Hospital and to the Llandough and City Lodge Hospitals of the Cardiff Corporation. His services were also much in demand for private cases for he was an excellent anæsthetist, well versed in modern methods, while as a teacher all his instruction was thorough and well informed. At the time of his death he was a member of the council of the section of anæsthetics of the Royal Society of Medicine. At Cardiff also his outside interests were large and many of them were centred on various forms of sport. He was an active supporter of the Glamorgan County Cricket Club and the Welsh Amateur Boxing Association. He had, indeed, a decided and vigorous personality and his interest in patients was not confined to that of an anæsthetist.

Dr. Greaves leaves a widow but no children.

FREDERICK WILLIAM OLDERSHAW, M.R.C.S. Eng., D.P.H.

BY the death of Dr. F. W. Oldershaw, medical officer of health for Weymouth, the town and neighbourhood have lost an important official. He received his medical education at the London Hospital and was Drapers' open science scholar at the University of London. He took the English double diplomas in 1924 and, having secured the D.P.H. in 1928, acted as assistant school medical officer to the Nottinghamshire county council. He was then appointed deputy M.O.H. for the borough of Swindon, afterwards becoming M.O.H. and school medical officer at Colne, a post he had held for two years, when in 1931 he became medical officer of health for Weymouth. During his occupation of this last post he proved himself an extremely hard-working and forward-looking officer; in fact, in the opinion of his fellow citizens, his early death could be attributed to the self-sacrificing way in which he interpreted his duties. For the past five years he was a tireless public health reformer, waging a steady campaign against overcrowding and bad housing, and tackled insanitation generally whilst he voiced his criticisms of those who appeared apathetic in these matters in an outspoken manner. During his short period of office the sanitary conditions of the town, which came to include additional areas, called for strenuous work. The health institution at Westham, which was largely the creation of his predecessor in office, developed under him, and in particular he was instrumental in establishing orthopædic and chiropodic clinics there, while during his term the re-drainage of the borough now in progress was started.

Dr. Oldershaw's health failed in the summer, and about two months ago he went away for a complete rest, going to Lincoln where his parents lived. He had there an attack of rheumatic fever which proved fatal. He leaves a widow and three children, with whom widespread sympathy is felt, for he was only 40 years of age.

THOMAS PERCIVAL BERRY, M.D. Lond.

THE recent death of Dr. T. P. Berry occurred at Zurich shortly after his retirement from his position as chief medical officer to the Great Western Railway at Swindon. Dr. Berry received his medical education at Guy's Hospital, and graduated in 1898 as M.B. Lond., proceeding later to the M.D. degree. At Guy's he filled the post of assistant house surgeon, and later held a resident obstetric office, at the termination of which post he was appointed medical officer at St. Saviour's Infirmary, East Dulwich. He later went into practice at Swindon and, in 1921, was appointed chief medical officer to the Great Western Railway at Swindon. He was associated with the Swindon G.W.R. Medical Fund Society for thirty-two years, and was also physician to the Swindon Victoria Hospital and the Swindon Maternity Home. In his private practice he was much esteemed by his patients, and in the administration of the medical fund he was notable for the generous way in which he interpreted the needs of the cases that came before him. This kindness of heart he was wont to display at Christmas by making a round of visits, sometimes in the traditional costume of Santa Claus, to sick children and cripples who had come under his care in the course of his professional duties, his car being loaded with suitable gifts.

When he retired last May, for reasons of health, he went on a continental tour, but despite specialist treatment recovery did not ensue, and he died at Zurich, the home of his wife, at the too early age of 61.

PUBLIC HEALTH

Middlesex Sewage Scheme

THE inauguration by the Minister of Health of the new sewage treatment works for West Middlesex at Mogden, near the Twickenham football ground, will have far-reaching results. It will eliminate the nuisance or unpleasantness in the near neighbourhood of some of the smaller works which it replaces and it will improve the condition of the non-tidal reaches of the Thames for some distance above the intakes of the Metropolitan Water Board as well as the tidal part of the river bordered by the county of Middlesex. Instead of the sewage of a million people being treated at more than twenty small works of varying antiquity and efficiency it is brought to one entirely new works, designed in the light of modern knowledge by Mr. J. D. Watson, whose long experience at the Birmingham, Tame, and Rea works places him in the first rank of sewage experts.

The effluent discharged from the Mogden works into the Thames at Isleworth Eyot will need to be very good, since the self-purifying power of the river, which to some extent nullified the pollution caused by one discharge before another came in a few miles down stream, does not now come into play. The Middlesex authorities have such confidence in their power to produce a good effluent that they have consented to very drastic requirements on the part of the Port of London Authority, which is in charge of the tidal river. The combined scheme of sedimentation

and biochemical treatment in use at Mogden should be sufficient to justify these hopes, at least for some years to come; the testing time will come later, for the 160 square miles served by the scheme is a district of rapidly growing population. The erection of the works at Mogden and the sludge digestion works a short distance off where combustible gas sufficient to provide power for the various purposes of the works is generated by fermentation of sludge is only one part of the scheme. Middlesex is not a hilly county and the area served includes the Hounslow Heath flat, but the linking of the many scattered districts has involved a great system of main sewers the construction of which has taken some years and has required much scheming, negotiation, and engineering work, and incidentally has caused much inconvenience to householders which is now happily at an end.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 14TH, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2250; diphtheria, 1373; enteric fever, 17; pneumonia (primary or influenzal), 640; puerperal fever, 37; puerperal pyrexia, 101; cerebro-spinal fever, 8; acute poliomyelitis, 8; encephalitis lethargica, 4; dysentery, 19; ophthalmia neonatorum, 61. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 20th was 3112, which included: Scarlet fever, 1150; diphtheria, 978; measles, 21; whooping-cough, 326; puerperal fever, 13 mothers (plus 8 babies); encephalitis lethargica, 288; poliomyelitis, 2. At St. Margaret's Hospital there were 12 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 4 (0) from measles, 7 (1) from scarlet fever, 8 (1) from whooping-cough, 39 (5) from diphtheria, 44 (10) from diarrhœa and enteritis under two years, and 32 (7) from influenza. The figures in parentheses are those for London itself.

Newcastle-under-Lyme reported the only fatal case of enteric fever. Stoke-on-Trent had 2 deaths from measles; Sunderland had 2 deaths each from scarlet fever and whooping-cough. Fatal cases of diphtheria were reported from 24 great towns; Liverpool 4, Hull and Manchester each 3.

The number of stillbirths notified during the week was 280 (corresponding to a rate of 45 per 1000 total births), including 51 in London.

PARLIAMENTARY INTELLIGENCE

DIVORCE LAW REFORM

IN the House of Commons on Nov. 20th Mr. DE LA BERE moved the second reading of the Marriage Bill.—Mr. A. P. HERBERT, in seconding the motion, said he did not espouse this cause because he was a lifelong Bohemian who was anxious for sexual licence or as a hard-luck story, but because he believed that it would bring new strength to the institution of the family and to the relations between Church and State. At the moment the law of divorce was mocked not only in words but in deeds. There was collusion and perjury, and the wrong people got what they wanted and the right people could not. They were rapidly reaching a situation in which no stigma whatever would attach to a public confession of adultery.

Under Clause 1 of the Bill there would be no dissolution of the marriage tie within five years of the date of marriage.

Clause 2 dealt with the grounds upon which divorce should be granted. The first was adultery—the only ground which existed at present in this country—desertion, cruelty and habitual drunkenness (plus a period of three years separation on that ground), and incurable insanity. The general intention was that where an unfortunate person became incurably insane and had been continuously insane—however that might be defined—for a period of five years the spouse of that person should be able to form a new home. In 1930, the last year for which figures were available, there were 40,000 married lunatics in this country, and 20,000 of these had been certified for more than five years. The evidence before the Royal Commission showed that of the number of lunatics who recovered 88 per cent. recovered in two years; 9 per cent. in three to five years; 1·6 per cent. between five and ten years; and a negligible 0·5 per cent. between 11 and 20 years. Those he would emphasise were the proportions of the number who recovered and not of the entire number of lunatics. The last ground for divorce mentioned was that the respondent was undergoing imprisonment under a commuted death penalty. At present there were 74 people, not necessarily married, serving such sentences.

Clause 3 dealt with technical safeguards against collusion and connivance.

Clause 5, which dealt with the new grounds for nullity, followed the recommendations of the Royal Commission.

Clause 6 was intended to clear up the tangle created when a man disappeared for seven years and then turned up again.

Clause 7 abolished the decree nisi. When a wife in poor circumstances had to complain of the cruelty, desertion, or drunkenness of her husband she went to the police-court. It might be that some medical question arose which could be dealt with by medical advice, and in such cases a doctor was called in. That procedure went on when the application was for separation, but if the wife wanted a divorce the case passed out of the kindly, human domestic atmosphere of the police-courts to the Assizes or the High Court. Here it was a question of legal rights and not one of adjustment and conciliation.

The proposal in Clauses 9 and 10 was to give the first hearing of divorce cases to magistrates selected by the Lord Chancellor.

Sir DONALD SOMERVELL, Attorney-General, said that it was quite clear from the speeches that day that the House desired this Bill to get a second reading. On the face of it there were a number of considerations in it which would require the most careful examination. There were a certain number of them to which he saw objections. Members must vote for or against the second reading according to their convictions. He did not think that he could be called upon at that stage to express either approval or disapproval of the principles of the measure.

The second reading of the Bill was carried by 78 votes to 12.

NOTES ON CURRENT TOPICS

Infanticide Bill

In the House of Commons on Nov. 24th Mr. JAGGER asked leave to introduce the Infanticide Bill, the object of which is to provide that a woman who wilfully causes the death of her child being under the age of eight years may, in certain conditions, be convicted of infanticide. He said that the Bill consisted of one clause. It merely sought to legalise what had been the consistent practice for nearly 90 years, and to remove the legal anomaly and futile cruelty involved in sentencing women to death when it was perfectly well known to everybody, except the unfortunate prisoner, that there was no intention of the sentence being carried out. There had been six cases of that character in the last 12 months, and one judge had told the prisoner that she need take no notice of the dread sentence he was about to pass upon her. In this class of case, Mr. Jagger contended, there was a very real need of doing something more than was done by the Infanticide Act

of 1922. Of the eleven cases which had occurred in recent years, he would instance two. One was that of a girl of 18, who drowned her illegitimate child of 18 months. The child's father, a military man, failed to pay alimony as ordered by the court. Eventually the girl was driven to desperation. According to the medical evidence, the girl had only the mentality of a child of 11. After being sentenced, she was in the condemned cell for 13 days and was then reprieved. Another, and more recent case, was that of a domestic servant of 26, who had an illegitimate child. The father failed to pay alimony and the girl tried to earn money to pay the foster-parents. She got behind with the payments and the foster-parents ordered her to remove the child. The woman jumped into the river with the child in her arms. The child was drowned, but the mother was saved, and there followed what was almost the farce of a judicial trial for murder. A verdict of "guilty" was brought in, she was sentenced to death and reprieved within 24 hours. The promoters of the Bill desired that the Infanticide Act of 1922 should be repealed, and should be replaced by the present Bill, which would so amend the original Act as to make it possible for juries in situations of the kind to which he had referred, even though the period exceeded the present limit which in practice was interpreted by the judges as being about 21 days, to extend it so as to cover mothers who committed acts of the kind he had referred to under extreme stress arising from other causes than the immediate effect of childbirth.

Leave was given to introduce the Bill which was read a first time.

QUESTION TIME

WEDNESDAY, NOV. 18TH

Enlistment for the Royal Air Force

Mr. DAY asked the Under-Secretary of State for Air the number of applications received for enlistment into the Royal Air Force for the year ended March 31st, 1936; the number that were medically examined and found physically fit; the number attested during the same period; and the number rejected for any cause.—Sir P. SASSOON replied: The number of definite applications for enlistment during the year ended March 31st, 1936, was 32,245. During the same period 18,889 were medically examined and found physically fit and 14,005 were attested. I regret that details are not available as to the numbers rejected for different reasons.

THURSDAY, NOV. 19TH

Unemployment Regulations and the Means Test

Mr. KENNEDY asked the Minister of Labour if he had considered the case stated on Thursday last against the changes proposed in the new unemployment regulations and the operation of the means test by the deputation representing the national hunger marchers; and if any action was proposed by the Government on the lines of the changes suggested by the deputation.—Lt.-Col. MUIRHEAD, Parliamentary Secretary to the Ministry of Labour, replied: When my right hon. friend met a deputation of Members of Parliament accompanied by marchers on Thursday last, he found that there was considerable misunderstanding as to the way in which the new unemployment assistance regulations would work, and he offered to have inquiries made into the individual cases that had been referred to if details were sent to him through the Members. At the same time, he made it clear that the Government had no intention of proposing any change in the regulations.

Canned Goods and Public Health

Captain CUNNINGHAM-REID asked the Minister of Health if he would consider the desirability of promoting legislation both to provide for the marketing of canned goods with an indication of the date and place of preparation, and to prohibit the sale of such canned goods beyond safe periods.—Mr. HUDSON, Parliamentary Secretary to the Ministry of Health, replied: My right hon. friend has considered this question but, having regard to the administrative difficulties involved, he is not satisfied that the advantage to the public health would be sufficient to justify the adoption of the measures suggested by my hon. friend.

Milk Pasteurising Plants

Sir ARNOLD WILSON asked the Minister of Health whether his attention had been called to the statement in the report of the medical officer of health of Bootle that, of 13 samples of pasteurised milk taken from two licensed plants of modern design erected in the previous year, only eight conformed to official standards, and of 21 samples of school milk only 15 came up to standard; and whether, in view of the proved inefficiency of many modern pasteurising plants, as shown by the official report of Sir W. Dalrymple-Champneys, and of similar reports from other county boroughs, he would initiate fresh scientific inquiries into this matter.—Mr. HUDSON replied: My right hon. friend is aware of the statement in the annual report of the medical officer of health for Bootle. My department in May, 1935, circulated to local authorities a detailed memorandum on the requirements for ensuring the efficient working of pasteurisation plants, and on April 24th last, in a circular letter, my right hon. friend again drew their attention to the matter. He then suggested that they should survey all licensed plants in their areas and cause frequent inspections to be adopted in future. My right hon. friend does not consider that any fresh scientific inquiry is at present required on this subject, but rather continuous activity on the part of the licensing authorities in supervising the operation of pasteurisation plants.

Brigadier General CLIFTON BROWN: Has the hon. gentleman seen the report of the Reading Agricultural College that a disturbingly high proportion of samples taken are contaminated?—Mr. HUDSON: That appears to emphasise the need for local authorities to follow the advice of the Ministry and to exercise strict supervision over the pasteurising plants in their areas.

Mr. A. V. ALEXANDER: Is the Parliamentary Secretary aware that owing to the use of unpasteurised milk at Bournemouth there were 500 cases of typhoid and 40 deaths?—No further answer was given.

MONDAY, NOV. 23RD

Black-listed Elementary Schools

Mr. LECKIE asked the President of the Board of Education the number of elementary schools now on Black List A; whether any additions had been made to that list during the past two years; and when he expected that they would all have been dealt with.—Mr. GEOFFREY SHAKESPEARE, Parliamentary Secretary to the Board of Education, replied: The number of schools now in Category A of the Board's list of public elementary schools with defective premises is 166. No additions have been made to the list during the last two years. As regards the last part of the question the attention of local education authorities has recently been called to the need for action in this matter, and my right hon. friend is anxious to see all the outstanding cases dealt with as soon as possible.

TUESDAY, NOV. 24TH

Illegal Operations and Maternal Mortality

Mr. BOOTHBY asked the Minister of Health if any statistics existed to show whether the prevalence in this country of illegal operations for abortion by unqualified persons was a contributive factor to the high rate of maternal mortality; and whether, in view of the recommendations of the British Medical Association, following the report of its special committee, His Majesty's Government would consider setting up a Royal Commission to inquire into the operation and results of the present law relating to abortion, with a view to its reform.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the negative. The suggestion made by my hon. friend in the second part of the question will receive my careful consideration when I have before me the report, now in course of preparation, of the special investigations recently made by officers of my department into maternal mortality in various parts of the country.

MEDICAL NEWS

University of Oxford

Mr. Victor Lack has been appointed clinical examiner in midwifery in place of Mr. A. C. Palmer who has resigned.

It is announced that Sir Farquhar Buzzard will stand as the official Conservative candidate for the University at the parliamentary by-election that will become necessary when Lord Hugh Cecil resigns his seat. Sir Farquhar, who is 64, has lately received permission to retain office as regius professor of medicine until after his seventieth birthday.

On Tuesday last Lord Nuffield stated that he has decided to increase his gift of £1,250,000 for post-graduate medical training and research at Oxford to £2,000,000.

University of London

The title of professor of pathology of mental disease in the university has been conferred on Dr. F. L. Golla and the title of professor of psychiatry in the university on Dr. Edward Mapother in respect of the posts held by them at the Maudsley Hospital.

Sir Ernest Graham-Little has for the fifteenth consecutive time been re-elected chairman of the council for external students of the university.

On Dec. 2nd, 4th, 7th, 9th, and 11th Dr. F. W. Twort, F.R.S., professor of bacteriology in the university, will lecture on the study of ultramicroscopic viruses. The lectures will all be given at 5 P.M., the first four at the London School of Hygiene, Keppel-street, W.C., and the fifth at the Brown Animal Sanatory Institution, 149, Wandsworth-road, S.W.8. Admission to the lectures is free without ticket.

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery.—M. Barker, Univ. of Sheff; R. F. B. Bennett, Univ. of Oxford and St. George's Hosp.; J. A. G. Gulliford, Welsh National School of Medicine; L. W. La Chard, St. George's Hosp.; and H. L. W. Sixsmith, Welsh National School of Medicine.

Medicine.—F. Hamed, Royal Free and West London Hosps.; C. R. Hardman, Univ. of Manch.; C. J. S. Sergel, Univ. of Camb. and St. Mary's Hosp.; H. L. W. Sixsmith, Welsh National School of Medicine; and F. J. C. Smith, London Hosp.

Forensic Medicine.—F. Hamed, Royal Free and West London Hosps.; C. R. Hardman, Univ. of Manch.; C. J. S. Sergel, Univ. of Camb. and St. Mary's Hosp.; H. L. W. Sixsmith, Welsh National School of Medicine; and F. J. C. Smith, London Hosp.

Midwifery.—C. C. B. Guest, Univ. of Sheff; T. A. M. Johns, Univ. of Oxford and King's Coll. Hosp.; J. H. Lewis, Univ. of Oxford and Charing Cross Hosp.; and F. L. Skinner, Univ. of McGill.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: C. R. Hardman, T. A. M. Johns, J. H. Lewis, C. J. S. Sergel, and H. L. W. Sixsmith.

University of Aberdeen

Dr. Dugald Baird, first assistant to the Muirhead professor of obstetrics and gynæcology in the University of Glasgow, has been appointed regius professor of midwifery in the University of Aberdeen in succession to Prof. R. G. M'Kerron who has resigned.

Dr. Baird, who is 36 years of age, graduated in science at Glasgow in 1919 and qualified in 1922. The next two years he spent in gaining general experience, in the course of which he took the D.P.H., and in 1924 he was appointed resident gynæcological registrar to the Glasgow Royal Infirmary under Prof. Munro Kerr. Two years later he went to Strasbourg to continue his studies, and on his return he was appointed surgeon to out-patients at the Royal Samaritan Hospital—an appointment that he resigned in 1927 when he took up his present post under Prof. James Hendry. In the same year he was appointed a British Medical Association research scholar, and from 1930 his investigations were also supported by grants from the Medical Research Council. He was made a foundation member of the British College of Obstetricians and Gynæcologists in 1932, and in the same year delivered the Bradshaw lecture of the Royal College of Physicians of London. This lecture, which was published in THE LANCET, described his observations on atony (and subsequent infection) of the upper urinary tract in pregnancy, which he related to endocrine dysfunction. In 1934 he obtained the degree of M.D. with honours and a Bellahouston gold medal, and in the following year he was elected F.C.O.G. Dr. Baird is consulting gynæcologist to the Glasgow Royal Cancer Hospital and visiting obstetric surgeon to the Glasgow Royal Maternity and Women's Hospital. A year ago his observations on the urinary tract were published in extenso in the *Journal of Obstetrics and Gynæcology of the British Empire*, and last February he contributed to our columns a suggestive address on maternal mortality in hospital.

Royal Sanitary Institute

A meeting of this institute will be held at 90, Buckingham Palace-road, London, S.W., on Tuesday, Dec. 8th, at 5.30 P.M., when Mr. H. H. George, assistant secretary of the Ministry of Health, will open a discussion on the abatement of overcrowding: the results of the first steps.

Pharmaceutical Society of Great Britain

Dr. J. G. Tait has been appointed resident secretary in Scotland to this society in succession to Mr. J. Rutherford Hill who has retired. Dr. Tait is the pharmacist representative on the consultative council on medical and allied services of the Department of Health for Scotland.

Glasgow University Club, London

The autumn dinner of this club will be held at the Café Royal, Regent-street, London, W., on Friday, Dec. 4th, at 7.30 P.M., with Prof. D. M. Blair in the chair. Any Glasgow University men who, though not members of the club, wish to attend are asked to write to the hon. secretaries, 62, Harley House, London, N.W.1.

Society of Medical Officers of Health

The annual dinner of this society was held on Nov. 20th at the Piccadilly Hotel, Dr. Ernest Ward presiding over a large and enthusiastic company. In proposing "The Society," Sir Kingsley Wood, surveying the gathering, suggested that a medical officer of health required the personal and social qualities of the accountant, the imagination of the advertising agent, the zeal of the missionary, the patience of Job, and the hide of the hippopotamus, "coupled," he added, "I suppose, with medical knowledge," to which his delighted hearers returned an ironical "No." The M.O.H., he went on, occupied the front-line position in the campaign for the reduction of disease and the promotion of healthy living. "I regard you," he said, "as captains of the health army." The best results were only to be achieved by coöperation and understanding between the central government and those engaged in health work at the periphery, and he mentioned gratefully the part played by the medical service in the national housing campaign which without its help would have been futile. He foreshadowed facilities for further dental treatment and for adequate equipment in physical education.—Dr. Ward, in reply, said he deeply felt the honour of being the first clinical officer to occupy the chair of the society, and if in the past he had been unduly critical he pleaded that the ardent reformer was apt to be distrustful of reforms initiated by others. He welcomed the initiative of the society in promoting post-graduate courses for M.O.H.'s, and in this undertaking they hoped for the advice and coöperation of the Ministry of Health. He concluded with thumb-nail sketches of some of the leaders of public health.—The toast of "The Guests" was proposed by Dr. F. T. H. Wood, who happily described his approach to the subject as cito tuto et jucunde. Whatever branch of medicine we practise, he said, we are one, and he compared the work of the surgeon with that of the M.O.H. The surgeon's work was individual, his results immediate, and his reward material. The M.O.H.'s work was communal, his results less easily demonstrated, and his reward a contented mind.—Sir Cuthbert Wallace said he was conscious that surgery had contributed less to public health than any other science, although the health service had many points of contact including, as it did, everything from teeth and tubercle to bathing-pools and backboards. But he pleaded that surgeons lived on the deficiences of the other branches: on accidents for which the Minister of Transport was responsible, on the failures of physicians, immunologists, and even of the preventive men.—Sir Comyns Berkeley, who also responded, spoke of friendly coöperation between the Central Midwives Board and the official health service, and of the forthcoming issue of rules for refresher courses.—Among the other guests were the master of the Society of Apothecaries, the president of the British Dental Association, the chairman of the General Nursing Council, the chief medical officer and the secretary of the Ministry of Health, the president of the British College of Obstetricians, and the chairman of the Metropolitan Boroughs Standing Joint Committee.

THE King has given permission to Major W. I. F. Powell, principal medical officer, Egyptian Army, to wear the decoration of Commander of the Order of the Nile conferred upon him by the King of Egypt in recognition of his valuable services.

Leeds Public Dispensary and Hospital

On Tuesday, Dec. 1st, at 8.30 P.M., Dr. J. Forestier of Aix-les-Bains will deliver a lecture at the arthritis clinic of this hospital on rheumatoid arthritis and its treatment with gold salts, a review of eight years' experience.

Diploma in Psychological Medicine

A course of lectures and practical instruction for the D.P.M. will be held at the Maudsley Hospital, Denmark-hill, London, S.E., from January to May. It is divided into two parts, and Part I. will begin on Jan. 4th. Further particulars may be had from Prof. F. Golla, honorary director of the medical school at the hospital.

British Serbian Units Branch

The annual dinner and dance of this branch of the British Legion will be held on Saturday, Dec. 5th, at the Lysbeth Hall, Soho-square, London, W., at 7.20 P.M. Dr. C. R. Cooke-Taylor will preside. The hon. secretary may be addressed at 24, Melcombe-court, Dorset-square, London, N.W.1. All who served Serbia and friends of Yugoslavia are welcome.

Scottish Lord Rectors

The students of Edinburgh University have elected Sir Herbert Grierson, emeritus professor of rhetoric and English at the University, to be their Lord Rector. Dr. Donald Pollock and Dr. Chalmers Watson were among the candidates. The students of Aberdeen University have elected Vice-Admiral Sir Edward Evans—"Evans of the *Broke*"—to be their new Lord Rector in succession to Mr. Walter Elliot.

British Institute of Radiology

On Dec. 2nd, at 3 P.M., Sir Farquhar Buzzard will open the tenth annual congress of this institute which will be held at the Central Hall, Westminster. On Dec. 3rd and 4th medical and physical and technical papers will be read and the official lectures will be given. Details of these will be found in our Medical Diary. The annual dinner will be held at Claridge's Hotel at 8 P.M. on Dec. 4th. An exhibition of apparatus organised by the British X ray industry will be held in connexion with the congress. The secretary of the institute may be addressed at 32, Welbeck-street, London, W.1.

Chadwick Trust

On Tuesday, Dec. 1st, Prof. S. D. Adshead will give the first of six Bossom lectures on improved methods and materials employed in building. He will speak on modern methods of building. On Dec. 17th Sir William Collins will take the chair at the second lecture of the series when Mr. Herbert Welch will speak on the construction of the modern house. Both lectures will be given at the Royal Institute of British Architects, 66, Portland-place, London, W. at 6 P.M. Further information about the series may be had from the secretary of the Chadwick Trust (204, Abbey-house, London, S.W.1), under whose auspices it is being held.

The Red Cross and Spain

At a statutory meeting of the council of the British Red Cross Society on Nov. 18th Sir Arthur Stanley, as chairman of the executive committee, reported on Red Cross action in Spain. The International Red Cross Committee, he said, had sent a delegate to visit both sides in the civil war, and had subsequently appealed to all national Red Cross societies to send assistance in personnel, material, and money. The British Red Cross immediately sent a donation of £500 to the International Committee, which established a number of centres in Spain, staffed with their own personnel, for the relief of soldiers and civilians of both sides. An appeal was made in this country for additional funds, as a result of which a further £500 had been sent to the International Committee as well as a supply of bandages. The total reached by the relief fund now stood at £1132 11*s.* 10*d.*

ON Tuesday night Lord Dawson of Penn was entertained at dinner at the House of Commons by his medical colleagues in both Houses and his ex-colleagues in the lower House, the occasion being to congratulate him on his viscounty.

Medicine in the Mission Field

An exhibition illustrating medical missionary work will be held, under the auspices of the West London Mission, at Kingsway Hall in the last week of January next. The secretary and treasurer is the Rev. W. Allan Harling, who, from Kingsway Hall, will be glad to give any further information.

National Ophthalmic Treatment Board

A new clinic has been opened in Torquay by this board in connexion with its national eye service. The ceremony was performed by Mr. A. W. Ormond, F.R.C.S., who explained that after the late war the Government had asked the British Medical Association to organise an ophthalmic benefit scheme run by medical men at a cost within the monetary reach of members of approved societies, and the present scheme was the result. The ordering of glasses and the treatment of ophthalmic patients should not, he held, be undertaken primarily by an optician. In his experience half of all ophthalmic patients had a medical cause for their troubles.

Appointments

COSIN, C. F., M.D., M.R.C.P. Lond., has been appointed Hon. Assistant Physician to Margaret-street Hospital for Diseases of the Chest, London.

DEVERELL, A. C., L.D.S., Hon. Dental Surgeon to the Royal Free Hospital, London.

KERR, A. L., M.B. Liverp., F.R.C.S. Eng., Hon. Surgeon to the Sutton and Cheam Hospital.

MCCOWAN, P. K., M.D. Edin. F.R.C.P. Lond., D.P.M., Physician Superintendent of the Crichton Royal Institution, Dumfries. (From March 1st, 1937.)

MOIR, A. R. M., M.B. Edin., D.P.H., Assistant Medical Officer for Stockport.

SHAPLAND, C. DEE, M.B., M.R.C.P. Lond., F.R.C.S. Eng., Pathologist and Curator to the Royal London Ophthalmic Hospital.

London County Council Hospital Staff.—The following appointments, promotions, and transfers are announced. A.M.O. (I.) and (II.) = Assistant Medical Officer, Grades I. and II. Temp. = Temporary D.M.O. = District Medical Officers.

GUNN, A. L., M.D. Wales, F.R.C.S. Edin., M.C.O.G., Part-time Obstetrician and Gynæcologist (Temp.), at Lewisham and St. Giles';

DODDS, R. L., M.Ch. Belf., F.R.C.S. Eng., M.C.O.G., Part-time Obstetrician and Gynæcologist (Temp.), Dulwich and St. James';

TOPHAM, E. J. E., M.B. Camb., D.M.R.E., Assistant Radiologist, Hammersmith;

CLARK, H. McD., M.B. Edin., A.M.O. (II.), Temp., St. Nicholas';

GRAHAM, K. I., M.B. Melb., A.M.O. (II.), Temp., Lewisham;

GRANT, ALAN, M.B. Aberd., A.M.O. (II.), St. Andrew's;

ROBERTS, J. C., M.B., A.M.O. (II.), St. Nicholas';

TULLIDGE, GLADYS M., M.B. Lond., D.T.M. and H., A.M.O. (II.), St. Benedict's;

ROSS, S. R., M.D. Edin., D.P.H., A.M.O. (II.), Queen Mary's, Carshalton;

ALLAN, D. Y., M.D. N.Z., A.M.O. (I.), St. Stephen's;

DAVIS, ELI, M.D. Manch., A.M.O. (I.), St. Stephen's;

JONES, D. E. A., B.Sc., Assistant Physicist, Hammersmith and Lambeth;

DON, T. A., M.B. Edin., D.P.H., A.M.O. (II.), King George V. Sanatorium;

DANSIE, E. R., M.R.C.S. Eng., House Physician, St. Giles';

POND, E. D., M.R.C.S. Eng., House Surgeon, St. Mary Abbots;

GAYER, LENA B., M.R.C.S. Eng., Clinical Assistant, Fulham;

MAYER, ELLEN, M.R.C.S. Eng., Clinical Assistant, St. Giles';

SKINNER, T. E., M.R.C.S. Eng., D.M.O. (Temp.), Peckham, Dulwich, and Sydenham;

ROWNTREE, ALYSOUN H., M.R.C.S. Eng., D.M.O. (Temp.), Finsbury;

GREEN, R. D., M.B. Lond., A.M.O. (I.), St. Pancras;

SIMMONS, J. H., M.D., M.R.C.P. Lond., Senior A.M.O. (I.), Mile End;

CUNNINGHAM, A. A., M.D. Dub., M.R.C.P. Lond., D.P.H., Senior A.M.O. (I.), North Western;

FAIRY, JAMES, M.B. Glasg., Senior A.M.O. (II.), Constance-road Institution;

KEY, L. A., B.A., M.R.C.S. Eng., Senior A.M.O. (II.), St. Luke's, Lowestoft;

CROWE, ELSIE V., M.B., F.R.C.S. Edin., Senior A.M.O. (II.), St. Alfege's;

CARDWELL, EUPHEMIA, L.R.C.P. Edin., A.M.O. (II.), Brook;

HEAF, F. R. G., M.D. Camb., Principal A.M.O. in connexion with the Scheme for the Treatment of Tuberculosis;

SWYER, ROBERT, M.R.C.S. Eng., D.P.H., Senior A.M.O. (I.), Brook.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Dec. 1st.
Pathology. 8 P.M., for 8.30 P.M. H. H. Brown: Immunity after Different Diseases. R. J. V. Pulvertaft: Post-hysterectomy Tetanus. H. P. Bayon: The Virus of Leukæmic Diseases in the Domesticated Fowl. Cuthbert Dukes: Histological Grading of Rectal Cancer.
Orthopædics. 8.30 P.M. Mr. H. A. T. Fairbank: Internal Derangement of the Knee in Children and Adolescents. Mr. Ralph Brooke: Bone Shortening for Inequality of Length in the Lower Limbs. Miss M. Forrester-Brown: Arthrodesis in Children.
WEDNESDAY.
History of Medicine. 5 P.M. Prof. G. W. Corner: Anatomical Illustration and the Fine Arts.
Surgery. 8.30 P.M. Mr. Geoffrey L. Keynes: The Operative Treatment of Uncomplicated Inguinal Hernia. Mr. W. I. Cumberlidge, Mr. W. H. Ogilvie, and Mr. C. C. Holman will also speak.
FRIDAY.
Otology. 10.30 A.M. (Cases at 9.30 A.M.) Dr. Paul Frenckner (Stockholm): Sinography, a Method of Radiography in the Diagnosis of Sinus Thrombosis. Mr. C. S. Hallpike: Some Recent Work on the Electrical Response of the Cochlea and Auditory Tracts.
Laryngology. 5 P.M. Dr. Frenckner: Bronchospirometry and its Clinical Application, with a Short Account of Bronchial Catheterisation. Dr. A. Soulas (Paris): Bronchoscopo-therapy in Broncho-pulmonary Suppuration; its Mechanism and Results. Prof. S. Belinoff (Sofia): Œsophagoscopy without Anæsthesia
Anæsthetics. 8.30 P.M. Dr. George Edwards: The Ideal Structure of a Modern Operating Theatre from the Anæsthetist's Point of View.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Dec. 4th.—7.30 P.M. (De Vere Hotel, S.W.), Dr. G. Konstam, Mr. H. L. Attwater, and Mr. A. E. Roche: Non-venereal Infections of the Urinary Tract.

BRITISH INSTITUTE OF RADIOLOGY.
WEDNESDAY, Dec. 2nd.—3 P.M. (Central Hall, Westminster), Sir Farquhar Buzzard: Opening Address.
THURSDAY.—10.30 A.M., Dr. J. F. Brailsford, Dr. R. E. Roberts, and Dr. L. M. Worth: Symposium on Bone Tumours. 2.30 P.M., Symposium of the Measurements of Ionisation Currents. 5 P.M., Dr. A. C. Christie: Diagnosis and Treatment of Primary Cancer of the Lung. (Nineteenth Silvanus Thompson lecture.)
FRIDAY.—10.30 A.M., Sir Thomas Dunhill, Dr. R. Boulton Myles, and Dr. S. C. Shanks: Symposium on Anatomical Variations of the Alimentary Tract. 3 P.M., Mr. J. D. Cockcroft: High Velocity Positive Ions. (Seventeenth Mackenzie Davidson lecture.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.
THURSDAY, Dec. 3rd.—5 P.M., Mr. Hugh Lett: Early Diagnosis and Treatment of Renal Tuberculosis. (Bradshaw lecture.)

UNIVERSITY OF LONDON.
WEDNESDAY, Dec. 2nd.—5 P.M. (London School of Hygiene, Keppel-street, W.C.), Prof. F. W. Twort, F.R.S.: The Study of Ultra-microscopic Viruses. (First of five lectures.)

ROYAL INSTITUTION, 21, Albemarle-street, W.
TUESDAY, Dec. 1st.—5.15 P.M., Prof. E. Mellanby, F.R.S.: Chemical Messengers of the Body.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Dec. 2nd.—3.30 P.M., Dr. Alfred Cox: Holidays in Winter.

ROYAL FREE HOSPITAL, W.C.
FRIDAY, Dec. 4th.—9.45 A.M., Mr. McLaggan: Diagnosis of Diseases of the Ear, Nose, and Throat. 10.30 A.M., Miss Collier: Recent Advances in their Treatment. 11.30 P.M., Mr. Shattock: Some Diseases of Bone. 2 P.M., Dr. Hobhouse: Nervous Disorders. 3 P.M., Dr. Gregory: Children's Diseases.
SATURDAY.—9.45 A.M., Mr. Verrall: Orthopædics. 11.30 P.M., Dr. Brain: Common Skin Diseases. 2 P.M., Miss Mann: Squints. 3 P.M., Prof. Fleming: Uses of Radium in Gynæcology.
SUNDAY.—10.15 A.M., Dr. Hare: Diet in Chronic Rheumatism. Dr. Howitt: Differential Diagnosis and Treatment of Chronic Arthritis. Dr. Taylor: Pathology and Bacteriology of Rheumatism.
The course is open only to former students of the hospital.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, Nov. 30th.—2.30 P.M., Dr. R. D. Lawrence: Diabetes and Diseases of Pancreas.
TUESDAY, Dec. 1st.—2 P.M., pathological demonstration.
WEDNESDAY. Noon, clinical and pathological conference (medical). 2.30 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. S. P. Bedson, F.R.S.: Virus Diseases.
THURSDAY.—2.30 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Mr. G. F. Gibberd: Toxæmias of Pregnancy.
FRIDAY.—2 P.M., operative obstetrics. 2.30 P.M., Prof. Seymour Barling: Acute Surgical Infections other than Bone. 3 P.M., department of gynæcology, pathological demonstration.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics or operations, obstetrical and gynæcological clinics or operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 30th.—10 A.M., skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, and gynæcological clinics. 4.15 P.M., Mr. Groen-Armytage: Obstetric Adventures.
TUESDAY, Dec. 1st.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics.
WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics. 4.15 P.M., Dr. Redvers Ironside: Diseases of the Skeletal Muscle.
THURSDAY.—10 A.M. neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations, medical, surgical, genito-urinary, and eye clinics. 4.15 P.M., venereal diseases.
FRIDAY.—10 A.M., medical wards, skin clinic. Noon, lecture on treatment. 2 P.M., operations, medical, surgical, and throat clinics.
SATURDAY.—10 A.M., children's and surgical clinics. 11 A.M., medical wards.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Nov. 30th, to SATURDAY, Dec. 5th.—LONDON LOCK HOSPITAL, 91, Dean-street, W., afternoon course in venereal diseases (open to non-members).—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W., 8 P.M., Tues. and Thurs., clinical and pathological course.—ST. MARK'S HOSPITAL, City-road, E.C., all-day course in proctology.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W., Wed., 8.30 P.M., Dr. Donald Hunter: Parathyroid. Fri., 8.30 P.M., Dr. R. A. Hickling: Pancreas.—These courses and lectures are open only to members.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
WEDNESDAY, Dec. 2nd.—2 P.M., Mr. T. Twistington Higgins: Diagnosis and Treatment of Genito-urinary Abnormalities. 3 P.M., Mr. J. H. Doggart: Development of Vision and Disturbances in Infancy.
Out-patient clinics daily at 10 A.M., and ward visits at 2 P.M.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 30th.—3.30 P.M., Dr. Hinds Howell: The Meninges and Cerebro-spinal Fluid.
TUESDAY, Dec. 1st.—3.30 P.M., Dr. Critchley: Aphasia, Apraxia, &c.
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Riddoch: Epilepsy and its Variants.
FRIDAY.—3.30 P.M., Dr. Purdon Martin: The Cranial Nerves.
Out-patient clinic daily at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Dec. 2nd.—4 P.M., Mr. L. R. Broster: The Surgery of the Gall-bladder.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Dec. 4th.—4 P.M., Mr. J. D. McLaggan: Acute Mastoiditis.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, 42, Ranelagh-road, S.W.
FRIDAY, Dec. 4th.—4.30 P.M., Dr. R. G. Gordon: Rheumatic Diseases of the Spine.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION
WEDNESDAY, Dec. 2nd.—3 P.M., Major H. N. Stafford: The Rôle of the General Practitioner in the Air-raid Precaution Scheme.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Dec. 1st.—4.15 P.M., Mr. P. S. Wrigley: Diagnosis and Treatment of Cancer of the Rectum.
FRIDAY.—4.15 P.M., Mr. D. L. Sewell: Direct Examination of the Larynx with Cases.

MANCHESTER HOSPITAL FOR CONSUMPTION, Deansgate.
WEDNESDAY, Dec. 2nd.—4.30 P.M., Dr. Simon Kelly: Hæmoptysis.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Dec. 3rd.—4.15 P.M., Clinical Meeting.

LEEDS GENERAL INFIRMARY.
TUESDAY, Dec. 1st.—3.30 P.M., Dr. Vining: Clinical Cases.

LEEDS PUBLIC DISPENSARY.
WEDNESDAY, Dec. 2nd.—4 P.M., Mr. A. Gough: The Treatment of Sterility.
TUESDAY, Dec. 1st.—8.30 P.M., Dr. J. Forestier: Rheumatoid Arthritis and its Treatment with Gold Salts; a Review of Eight Years' Experience. (Under the auspices of the Leeds Division of the British Medical Association.)

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Dec. 2nd.—4.15 P.M. (Victoria Infirmary), Dr. Ivy McKenzie: Extrapyramidal Nervous Diseases.

NOTES, COMMENTS, AND ABSTRACTS

A GROUP OF CRIMINALS

Dr. Gabriel Langfeldt, who for many years has served as a prison doctor in Bergen, has undertaken a far-reaching study of 50 Norwegian criminals serving sentences for theft or burglary (Norsk mag. f. laegevidensk., June, 1936, p. 561). Besides carrying out Binet-Simon-Terman intelligence tests, he submitted them to a physical examination and friendly questioning, supplementing the information thus obtained by conversations with police officials and the prisoners' relations. He is unable to subscribe to Lombroso's conception of the criminal born as such, and finds much in the prisoner's antecedents to explain his conduct. He notes that in the case of criminals coming from religious homes it took many years for the inhibitions created by religious influences to disappear, and they often did so comparatively late in life under the action of alcohol or some other releasing factor. Of the 21 prisoners who had grown up in a religious atmosphere, only 3, however, had taken any interest in religion; and only 3 of the 50 had developed any political interests. In as many as 17 cases, the school records and other data showed that well-defined intellectural deficiency had become evident early in the child's career. The intelligence tests showed about half the prisoners to be mentally below normal; and it was observed that a relationship could be established between the level of intelligence and the age at which the prisoner was first sentenced; the higher the age on first sentence, the greater the intelligence. Dr. Langfeldt finds that such "criminogen radicals" as impaired intelligence or weakness of will, may not singly give birth to crime; but an undesirable combination of two or more of these "radicals" may produce a criminal disposition. "In my thieves there were often three or four such 'radicals' combined. This undesirable combination may be so dominating that . . . even the best surroundings cannot prevent their development." One of his recommendations is that every first offender should be subjected to a psychological-psychiatric examination if he is to be properly understood and given fair play.

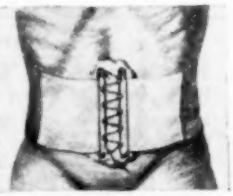
MIDWIFE AND BABY

IN his introduction[1] Dr. Moncrieff says that his aim has been to teach simple methods which may be carried out as easily in a cottage as in a well-equipped institution. The general plan of the book is to follow the programme of a baby's life, beginning with certain prenatal considerations and passing on through events likely to occur in the early days during which the midwife is largely responsible for the infant's welfare. The earlier sections, dealing with establishment of the breath, general hygiene, and feeding, will probably be those found most useful by the midwife. The importance of avoiding chill for a young baby is strongly emphasised. The newborn infant, Dr. Moncrieff says, is liable to have an incredibly low body temperature, and a special thermometer, reading as low as 90° F., should be used and used regularly. Much sensible advice as to bathing, clothing, ventilation of the room, and general care of the body is included in this part of the book. Dr. Moncrieff believes that many unnecessary operations for circumcision are performed, and that the majority might be avoided if the nurse and mother would take the trouble to loosen and retract the foreskin in the early days of life. Here and there the author tends to depart from his self-imposed rôle of simplicity, especially in the sections on disorders and malformations. Does every midwife readily understand such terms as œdematous reaction, brachial plexus, hypertonic saline, spina bifida, lanugo, and know just how to distinguish between small multiple abscesses which she is advised to treat with antiseptic lotion and pemphigus, for which she must secure immediate medical help? The premature infant has a section to itself, and one which all midwives might profitably study with care. The book is well printed and indexed.

[1] The Management of the New-born Baby: A Guide for Midwives. By Alan Moncrieff, M.D., F.R.C.P. London: Association of Maternity and Infant Welfare Centres. 1936. Pp. 48. 9d.

NEW METHOD OF SECURING BANDAGES

THE Expedo Speedy Fastener is designed to facilitate the frequent dressing and inspection of wounds. Two long safety-pins are provided with hooks which allow of their being laced together. The pins are inserted at a little distance from the opposing edges of the material covering the dressing (whether bandage, adhesive strapping, or plaster-of-Paris) and are laced together under appropriate tension, which may be greater at one end of the wound than at the other. The use of these pins, which embody more than one device to prevent slipping of the lace, should be a convenient variant of the usual method of drawing together gaping abdominal wounds by threading tape through perforations in two strips of adhesive strapping. The expedo pins, being easily removed for sterilisation, can be reinserted into a freshened cut edge of strapping, and the dressing can thus be kept much cleaner. The manufacturers (Messrs. Alexander and Fowler, Pembroke-place, Liverpool 3) suggest that, by use of their fastener, a split plaster-of-Paris casing can be reapplied without bandaging. One expedo is placed along either cut edge, with the hooks slightly back from the edge. A plaster bandage, previously soaked in water, is then folded over the straight side of the pin and smoothed down, and when the plaster has dried the splint is ready to be laced up. Bandaging of split plaster is such an easy matter that it is doubtful whether trouble is here saved by use of the expedo, especially as at least two pins would be required along each edge to span a splint of the usual length. A more useful application of the method would be in the dressing of compound fractures, where movements of the limb as a whole must be restricted to a minimum, and where the inspection of the wound after the first toilet—often performed in the casualty department—may be a matter of some anxiety. It will be seen from the illustrations that the pin is provided with a tubular mount at either end for the insertion of a small safety-pin. This prevents all tendency to "rucking" when the pins are inserted into soft material.



The expedo fastener is made in three sizes (3, 4, or 5 in. long), and there is also a small size with one hook for connecting up any two sizes when bandaging over the elbow or knee.

ST. MARYLEBONE AND WESTERN GENERAL DISPENSARY

IN 1785 the St. Marylebone General Dispensary was founded to aid those who "being poor, sick, and distressed persons . . . have not occasion to go, or could not stay in an hospital." For some years it has been felt that as its neighbourhood—Marylebone-lane—has been changing to a business centre, there would be more scope for its work if it could be moved nearer to the homes of the poor. On Nov. 2nd, therefore, it was transferred to 48, Cosway-street,

where in amalgamation with the Western General Dispensary, under the joint title of the St. Marylebone and Western General Dispensary, it will continue its work of "administering advice and medicines, for the relief of the sick and lame." The dispensary's activities include a children's rheumatism supervisory centre, clinics for respiratory diseases, surgery, varicose veins, ultra-violet radiation, departments for infant welfare and women workers, and a London County Council elementary school-children's dental clinic. It is proposed to make use of the additional space at the new premises by establishing a physical treatment centre which will be open in the evening to treat sufferers from rheumatism and other complaints who are still at work and are therefore unable to seek treatment at hospitals during the day. Reconstruction and new equipment have cost about £5500 and to raise this sum the dispensary is making its first public appeal for many years.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Hon. Jun. Asst. Surgeon for Ear, Nose, and Throat Dept.

Ayr County Council.—Obstetrician, £700.

Bath and Wessex Children's Orthopædic Hospital, Combe Park.—H.S., at rate of £120.

Battersea General Hospital, Battersea Park, S.W.—Cas. O. for Out-patients' Dept., at rate of £50.

Bedford, Bromham House Colony.—Res. Med. Supt., £650.

Bedford County Hospital.—Second H.S., at rate of £150.

Belfast, Royal Maternity Hospital.—Res. H.S., at rate of £100.

Birmingham General Hospital.—Res. Surg. Reg., £100–10–£120.

Birmingham, Queen's Hospital.—Res. Med. Reg., £200.

Birmingham, Selly Oak Hospital.—Res. Ear, Nose, and Throat. Surgeon, £700.

Board of Control.—Commissioner, £847.

Bradford Royal Infirmary.—Asst. Physicist, £300.

Brighton, New Sussex Hospital for Women, Windlesham-road.—H.P., £100.

Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £120. Also Hon. Clin. Asst. to Hon. Phys.

Brighton, Sussex Eye Hospital, Eastern-road.—H.S., at rate of £150.

Chester, County Mental Hospital.—Jun. Asst. M.O., £350.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O., £350. Also H.P., at rate of £100.

City of London Maternity Hospital, City-road, E.C.—Jun. Res. M.O., at rate of £80.

Cobham, Surrey, Schiff Home of Recovery.—Resident, at rate of £200.

Dreadnought Hospital, Greenwich, S.E.—Receiving Room Officer, at rate of £200. Also H.P. and H.S., each at rate of £110.

Dudley Guest Hospital.—Hon. Gynæcologist.

Durham County Council.—Asst. Welfare M.O., £500.

Durham, Seaham Hall Sanatorium for Women and Girls.—Jun. Res. M.O., £200.

Ealing, King Edward Memorial Hospital.—Two Cons. Physicians. Also Sen. Res. M.O., at rate of £250.

Eastbourne, Royal Eye Hospital, Pevensey-road.—H.S., £100.

East Ham Memorial Hospital, Shrewsbury-road, E.—H.S. to Spec. Depts. and Cas. O., at rate of £120.

East London Child Guidance Clinic, Bell-lane, E.—Hon. Asst. Psychiatrist.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—H.S., at rate of £100.

Hertford County Hospital.—Hon. Asst. Ophth. Surgeon.

Hospital for Tropical Diseases, Gordon-street, W.C.—H.P., at rate of £120.

Hospital for Women, Soho-square, W.—Res. M.O., at rate of £100. Hon. Clin. Assts. to Out-patients. Also Registrar, £75.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Anæsthetist.

Hull Royal Infirmary.—H.S. for Branch Hospital, £160. Also Second Cas. O., £150.

Ilford, King George Hospital.—Two H.S.'s, each at rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—Three H.S.'s to Special Depts., each £144.

Kent County.—Asst. Pathologist, £700.

Kingston and District Hospital.—Visiting Surgeon, £300. Also Res. Asst. M.O., at rate of £375.

Leicester City General Hospital.—Res. M.O., at rate of £300.

Liverpool, Cleaver Sanatorium for Children, Heswall.—Res. Asst. M.O., £300.

Liverpool, Fazakerley Sanatorium.—Res. Asst. M.O., £200.

London Homœopathic Hospital, Great Ormond-street, W.C.—Pathologist and Bacteriologist, at rate of £350.

London Hospital Medical College, E.—Demonstrator of Anatomy and Histology and Demonstrator of Pharmacology, each £400.

London Skin Hospital, 40, Fitzroy-square, W.—Hon. Physician.

London University.—Geoffrey Duveen Studentship, £450.

Marie Curie Hospital, 2, Fitzjohn's-avenue, N.W.—Res. M.O., £100.

Manchester Hospital for Consumption and Diseases of the Throa and Chest.—Res. Surg. O. for Ear, Nose, and Throat Dept. £200.

Manchester, Monsall Hospital for Infectious Diseases.—Second Res. Asst. M.O., £350.

Manchester, St. Mary's Hospitals.—Four H.S.'s to Special Depts., each at rate of £50.

Middlesex County Council.—Asst. M.O., £400.

Norwich, Norfolk and Norwich Hospital.—H.P., H.S.'s to Spec. Depts. Also Cas. O., each at rate of £120.

Nottingham City Hospital.—H.S., at rate of £150.

Pontefract General Infirmary.—Res. M.O., at rate of £150.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—Res. M.O., £200. Also H.S. and Cas. O., each at rate of £125.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O., each at rate of £100.

Rochdale Infirmary and Dispensary.—H.P., £150.

Royal Cancer Hospital, Fulham-road, S.W.—H.S. to Radium Dept., at rate of £200.

Royal Free Hospital, Gray's Inn-road, W.C.—Half-time Reg. for Ear, Nose, and Throat Dept., first H.S., Med. and Surg. Regs., each £200. Res. Cas. O., at rate of £150. Dist. Obstet. Asst. and Gynæcological Reg., each at rate of £100. Also Res. Anæsthetist in Obstet. and Gyn. Unit, at rate of £75.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Surg. Reg.

St. John's Hospital, Lewisham, S.E.—H.S. and Cas. O., each at rate of £100.

St. Mark's Hospital for Cancer, &c., City-road, E.C.—H.S., at rate of £65. Also Clin. Assistantships for Out-patients' Dept.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Asst. Physician.

St. Peter's Hospital for Stone, Henrietta-street, W.C.—Clin. Assts. to Hon. Staff.

St. Thomas's Hospital, Medical Unit, S.E.—First Asst. £500–£600.

Salford Royal Hospital.—Res. Surg. O., £200. Also two H.S.'s, each at rate of £125.

Seamen's Hospital Society, Greenwich.—H.S. for Tilbury Hospital, at rate of £140.

Sheffield, Jessop Hospital for Women.—Sen. Res. O., at rate of £150.

Sheffield Royal Infirmary.—Clin. Asst. to Surgical Dept., at rate of £300.

Southampton, Royal South Hants Hospital.—H.P., at rate of £150.

Southend Municipal Hospital.—Asst. M.O., £325.

Swansea General and Eye Hospital.—H.P. and H.S., each at rate of £150.

Warwick, King Edward VII Memorial Sanatorium, Hertford Hill.—Jun. Asst. M.O., £250.

Weir Hospital, Grove-road, Balham, S.W.—Sen. Res. M.O., £200.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Hon. Med. Psychologist for Child Guidance Dept.

West London Hospital, Hammersmith-road, W.—Cas. O., £250. Also H.P. and two H.S.'s, each at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Asst. Surgeon.

West Riding of Yorkshire County Council.—Cons. Tuber. O., £750.

Wickford, Essex, Runwell Hospital for Mental and Nervous Disorders.—Sen. Physician, £550.

Winchester, Royal Hampshire County Hospital.—Res. Surg. O., at rate of £200. Also H.P. and H.S., each at rate of £125.

Wolverhampton and Midland Counties Eye Infirmary.—H.S., £150.

Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.S., at rate of £100.

Worksop, Victoria Hospital.—Sen. and Jun. Resident, at rate of £150 and £120 respectively.

York County Hospital.—Asst. H.S. and Res. Anæsthetist, £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Presteign (Radnor), Barnsley (Yorks, W.R.), and Ebbw Vale (Monmouth).

Births, Marriages, and Deaths

BIRTHS

MATHESON.—On Nov. 13th, the wife of Dr. B. Matheson, Rowhill Mount, Wilmington, of a daughter.

MONCRIEFF.—On Nov. 19th, in London, to Honor, wife of Alan Moncrieff, M.D.,—a daughter.

SWAN.—On Nov. 16th, at Costock, Loughborough, the wife of Dr. W. D. Swan, of a daughter.

WILSON.—On Nov. 18th, at Eastbourne, the wife of Mr. T. Henry Wilson, F.R.C.S., of a son.

MARRIAGES

BUCK—CLOVER.—On Nov. 14th, at All Saints Church, Drinkstone, Suffolk, Kenneth Charles Buck, M.D. Lond., to Ida Mabel, third daughter of Mr. D. Clover, Drinkstone Mills, Bury St. Edmunds.

DEATHS

CUMMING.—On Nov. 18th, at St. Mawes, Cornwall, John Hamilton Cumming, M.R.C.S. Eng., of Queen's Gate, London, aged 51.

LAWSON.—On Nov. 20th, Garnet Gloag Lawson, M.B. Vict., D.P.H., of Dulwich-road, Herne Hill, late of Hebden Bridge, aged 61.

MCMURRAY.—On Nov. 17th, Alexander Muir McMurray, M.B. Glas., of Redcar, Yorks.

OGILVIE.—On Nov. 20th, at Edinburgh, Major-General Sir Walter Ogilvie, K.B.E., C.M.G., M.B. Edin., late I.M.S. and 40th Pathans, aged 67 years.

TAYLOR.—On Nov. 21st, at Thornbury, Bradford, Joseph van Someren Taylor, L.R.C.P. & S. Edin. (late Capt. R.A.M.C.), aged 55 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths